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CONTENTS

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Front Cover
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Australian Army Blackhawks from the 5th Aviation Regiment during Operation Tanager.
Photograph by WO2 Gary Ramage

Contemporary Perspectives on National Missile Defence

By Lieutenant Reuben R.E. Bowd, RAAOC

The concept of the development of a National Missile Defence (NMD) has been a contentious issue since the 1960s.[1] However, technological constraints have, to date, rendered any attempt to deploy such a system both impractical and premature. Furthermore, a variety of agreements, such as the 1972 Anti-Ballistic Missile (ABM) Treaty ratified by both Russia and the US, specifically prohibit the deployment of defensive measures such as those presently being proposed by the US under the umbrella of the NMD project.[2] The proposal, and more recently the decision, by the US to deploy NMD today forms a focal issue of debate both within the US and across the international community due to a myriad of uncertainties and global security concerns which such a deployment may present. Fears for the future of bilateral and unilateral agreements, aimed at the non-proliferation of weapons of mass destruction (WMD), especially in a time of post-Cold War goodwill and disarmament, are paramount. Some experts even go as far as anticipating a renewed global arms race which would, instead of creating a more secure environment for the US (the very object of NMD), present new and increased dangers not only for that nation but across the globe.[3] These fears are by no means unfounded and a global increase in such weapons, within nuclear states currently not technologically capable of NMD, as a counter to the strategic advantage afforded the US by such a system should not come as a surprise. However, a moderate, rather than extreme response, is anticipated by adversaries of the US. The reason for this is that the US has proposed the deployment of "limited" NMD whilst simultaneously expressing its inclination to unilaterally reduce, rather than aggressively increase, US nuclear forces.[4]

This article seeks to discuss the potential outcome of an NMD deployment as proposed by the Bush Administration in defence of US territory. It will briefly cover NMD in an historical context as a legacy of the Cold War and will outline the NMD deployment system, as advocated by President Bush. Additionally, technological merits of NMD in its present context will be explored as will the arguments for and against deployment, its vulnerabilities, and the likely military and political reactions by adversaries of the US to any deployment.

Historical Perspective

Historically, NMD is no new concept. Its origins can be directly traced as a legacy of the Cold War. As early as 4 July 1945, despite conclusions by US industry that available technology precluded building an effective missile defence, the Army made its first recommendation to begin a research and development effort to counter ballistic missiles (BM).[5] NMD, to date, boasts a lineage of failure. During the 1960s, Presidents Johnston and Nixon launched a program which culminated in deployment, in 1975, of the Safeguard anti-missile system, designed initially to protect US missile silos, with an "expansion option" to allow the system to protect population centres against the "North Country Threat".[6] However, this system was abandoned on completion because it simply did not work. In fact by the time this early form of NMD came online it was realised that the new Soviet multiple independent re-entry vehicle (MIRV) program would easily overwhelm it. It was also vulnerable to direct attack and technical problems (such as radar blinding by electromagnetic pulse) from

exploding nuclear warheads which made the system unreliable, and even threatened the survivability of American missiles it was assigned to protect.[7]

During the 1980s the prospect of an NMD was resurrected by Ronald Reagan with his "astrodome defence" dubbed "star wars", aimed at creating a layered defence system for the US and making ballistic weapons "impotent and obsolete".[8] This was a program largely driven by an attempt to counter the threat presented by Soviet MIRVs. Like Safeguard, the proposed NMD system was beset with technological impediments and was premature in concept. Instead of ending the global nuclear arms build-up it caused the opposite to occur.[9] "Star Wars" was perceived by the Soviet Union as affording the US a strategic advantage during a period of "nuclear freeze".[10] Both proposals did not fail in concept but rather proved to be technologically premature for their time. However, recent developments suggest that the requisite technology required for effective NMD may not elude the scientific community for much longer. What these two attempted deployments do demonstrate clearly is the likely reaction which nuclear opponents of the US will have to any NMD system coming on-line.

Russia is currently the only country with an operational BMD system which protects its capital Moscow. This system is compliant with the ABM Treaty and even to this day continues to be upgraded.[11] It began development in the late 1950s with the most recent upgrade coming on-line in 1989. However, the Moscow BMD is the technological equivalent to Safeguard, sharing that system's limitations and vulnerabilities.[12]

President Clinton on July 22 1999 declared it to be US policy to "deploy as soon as technologically possible an effective NMD system".[13] This was an extension of his Administration's "3+3" NMD plan which was announced in April 1996.[14] The stated purpose of any NMD system was to protect all US territory against limited ballistic missile attacks launched deliberately by "rogue states" and to provide defensive measures to counter an accidental or unauthorised launch from any source. Clinton's statement, rather than indicating a change in the traditional Democrat stance on opposing NMD, was primarily made in an attempt to silence Republican opponents who were criticising Clinton for, in their opinion, neglecting US defence issues. Clinton placed provisos on his plan to deploy which proved, in reality, unachievable during his term in office. He stated that his final decision on deployment would be based on considerations of technical performance, threat assessments, all the costs and arms control implications.[15] On 1 September 2000, the debate was temporarily put on hold when Clinton decided not to authorise the deployment of NMD due to technology constraints, the refusal by Russia to agree to modify the ABM to permit deployment, and the reluctance of America's allies to endorse NMD unless strategic stability could be assured through a modified ABM Treaty. Clinton's assessment was supported by the Union of Concerned Scientists, which in a news conference during June 2000 described the NMD programme as scientifically unsound and a "fatal rush...with a system that can't work".[16]

However, on assuming office in 2001, President George W. Bush announced that it was his Administration's intention to deploy a Capability 1 system comprising 100 interceptors as early as 2005 with a Capability 3 system being deployed by 2011 with 125 interceptors located at two sites in Alaska and North Dakota.[17]

The ABM Treaty

By seeking to shake off restrictions imposed by treaties such as the ABM, the current NMD proposal breaks with previous US policy which aimed at "limited" NMD within the framework of the treaty. For example, on 5 December

1994, President George Bush signed the Missile Defence Act mandating to:

> *Develop for deployment by the earliest date allowed by the availability of appropriate technology or by Fiscal Year 1996 a cost effective, operationally effective, and* **ABM Treaty-compliant**[18] *anti-ballistic missile system. . . designed to protect the United States against limited ballistic missile threats, including accidental or unauthorised launches or Third World attacks.*[19]

The Act also specifically directed that Brilliant Pebbles (space-based interceptors which were under development) was not to be part of any initial deployment as it threatened current agreements on the militarisation of space.

Presently, under the restraints of the ABM Treaty signed on 26 May 1972, the deployment of NMD is prohibited. However, an amendment on 3 July 1974 does permit each side one deployment site limited to 100 interceptors.[20] In August 1997, in response to the disintegration of the Soviet Union, the newly formed nuclear states also signed the ABM which the US now wishes to part with or at the very least amend. On 20 June 1999, US President Bill Clinton and Russian President Boris Yeltsin issued a joint statement affirming their commitment to the ABM Treaty which was described as "a cornerstone of strategic stability", pledging "to [continue] efforts to strengthen the treaty, to enhance its viability and effectiveness in the future".[21]

However, all this changed when on 1 May 2001 President George W. Bush delivered a speech in which he said that a new framework was needed, "beyond the constraints of the 30-year old ABM Treaty" that allows the US to "build missile defences to counter the different threats of today's world".[22] In June 2001, US Secretary of State Colin Powell stated that the US would break with the 1972 ABM Treaty as soon as it became a hindrance to the Government's plans for a NMD system and that US internal policy would not be dictated by Russia.[23] However, if the US was willing to throw away the ABM Treaty then what would prevent Russia from doing the same, and by doing so set back hard won agreements of the post-Cold War era? It is true that many elements of the ABM are in fact a product of specific political and technological circumstances of the Cold War; however, should the US choose to repudiate it Russia may choose in turn to absolve itself of other international obligations, debts and responsibilities made by the Soviet Union.[24] These concerns were realised when, in response to the proposed NMD deployment, President Putin of Russia addressed the Duma saying:

> *If... the US proceeds to destroy the 1972 ABM Treaty - and I want to make this clear - ... if that happens, we can and will withdraw not only from the START II Treaty, but from the whole system of treaty relations having to do with the limitation and control of strategic and conventional arms.*[25]

Russia, in the words of Putin, is "against having a cure that is worse than the disease".[26] It also has condemned US NMD tests and has warned the US that the breaking of ground for a firing range at a missile defence site in Alaska will be considered a breach of the ABM Treaty.[27] Like many other countries, Russia takes the view that the US's unilateral withdrawal from the ABM Treaty would lead to the destruction of strategic stability, a new arms race, particularly in space, and the development of means for overcoming the NMD system. Vladimir Rushailo, the head of Mr Putin's security council, said that "The international community should consolidate its efforts to prevent such developments".[28]

The events of 11 September 2001 gave a new perspective to the NMD debate. President Bush used the disaster to emphasise the urgency for NMD deployment whilst opponents pointed out a need to concentrate on conventional means of preventing terrorism. On 23 October an agreement was

struck between the US and Russia that allowed for progress toward NMD deployment in return for sharp decreases in US missile holdings. This was cemented on 15 November when President Bush announced a 2/3rd reduction in the US nuclear arsenal.[29] The certainty of the future direction of the program was made clear when President Bush announced on 13 December 2001 that the US had given "formal notice to Russia" of its intention to withdraw from the ABM Treaty. This commenced a six month timeline toward withdrawal.[30] Bush emphasised that the two nations had come to a new relationship no longer based on mutually assured destruction but instead on mutual cooperation. Despite Russian insistence that the decision was not seen as posing any serious security threat President Putin did describe the decision as a mistake and emphasised the urgent need for a new international framework to be put in place of the ABM. Likewise, China expressed concern as to the impact of the US decision. Australia, on the other hand, wholeheartedly supported the US position sharing US concerns toward the increasing global missile threat.[31]

The NMD System as Proposed by Bush

Deployment of NMD as envisaged under the present Bush Administration will not comply with the ABM Treaty largely because the system under development (although "limited") is to be programmed to have a maximum of 250 interceptors at two locations.[32] The project will cost American taxpayers at most conservative estimates $60 billion dollars.[33] This expenditure adds to current estimates that since 1983 the Pentagon has spent $95 billion on BMD and roughly $44 billion on NMD alone.[34] The system is expected to use ground based interceptors and forward-deployed radars, sea-based interceptors deployed near states of concern, and space based early warning, tracking and queuing radars, as well as conventionally armed space-based interceptors.[35] This system is dissimilar to that envisaged under the Strategic Defence Initiative ("Star Wars") in the 1980s in that its effectiveness will be measured by its ability to successfully intercept some tens or low hundreds of incoming missiles, not thousands.

The National Missile Defence (NMD) program has been described by the Pentagon as a "system of systems".[36] It involves a vast and global network of tracking and monitoring sites linked by high speed data communications and involving the most advanced technologies. In order to successfully work all parts of the network must perform their part perfectly. Currently, there are seven parts to the Bush NMD deployment system, as follows:

1. The initial launch detection and tracking system that consists of the satellites of the Defence Support Program (DSP). In 2006 or 2007 these will be replaced by the Spaced Based InfraRed System-High (SBIRS-High) constellation of five (plus one in reserve) geosynchronous satellites.

2. Five ground-based early warning radars (including one each in the UK and Greenland) that receive the initial tracking data from DSP or SBIRS-High through the system's command and control network.

3. Four but possibly as many as nine (including one each in the UK, Greenland, and South Korea) X-band (high frequency, short wavelength) radars whose function is to discriminate between incoming real warheads and decoys. The first is to be built on Shemya Island in Alaska.

4. An interceptor booster, which carries an exoatmospheric kill vehicle (EKV) to close proximity of the planned intercept point. While in flight the EKV receives updated information on the changing location of the incoming missile and passes this information to the booster until separation.

5. EKV, whose on-board computer processes updates on the location of the hostile missile after the EKV has separated from the booster. The EKV has a combined optical and infrared (multiple waveband) sensor on board through which it acquires, tracks, and discriminates its target.

6. The Battle Management, Command, Control, and Communications (BMC3) network, the heart of NMD. It links the separate elements, receiving and processing data of every kind. A critical sub-element is the In-Flight Interceptor Communications System (IFICS) through which information is sent to the interceptor as it flies toward the target.

7. A constellation of 24 low orbit SBIRS-Low satellites that will improve launch detection and warhead-decoy discrimination, is to be added later but is currently at the "experimental" level.[37]

As outlined, the seven complex components of the NMD system must perform perfectly, first as separate parts, and then mesh together if the system is to successfully intercept a hostile missile. Technology is proving to be the brake on deployment.

Technological Concerns

To many, expectations of NMD are unrealistic taking the form of a "field of dreams" attitude based on the premise which states that "if we build it, it will work", placing a blind faith in technology.[38] To date the greatest technological developments in Ballistic Missile Defence (BMD) have been in the field of Theatre Missile Defence (TMD) rather than NMD. This is primarily due to a decision in May 1993 by then-Secretary of Defense Les Aspin to reorientate the Ballistic Missile Defence Organisation (BMDO) toward the development of TMD's.[39] It is worth while at this stage briefly describing both types of BMD.

In simplistic terms, TMD is designed to intercept short-range missiles whilst NMD concentrates on a long-range missile threat. Both use similar technologies which include satellite-based infared sensors that detect and track launches, radar to follow a threat and interceptors to destroy a target. Eventually, both systems may also include space-based lasers although today this aspect remains purely academic. The US already deploys a version of TMD (the Patriot) which, although far from perfected, goes some way towards demonstrating the potential of pending technological enhancements which may easily be converted for NMD application.[40]

Arguably, the greatest difference between the two forms of MD is not technological but rather political. While TMD enjoys wide support in the US policy debate, NMD remains highly contentious.[41] The popularity of TMD is easily explained. Put simply, TMD addresses a non-contentious, real and visible military need in today's world having been proven necessary through its application in recent military confrontations involving the US.[42] TMD gained essential popularity from its role during the 1991 Gulf War where the early Patriot system was deployed against Iraqi Scud missiles being launched at Israel. Although the system demonstrated its technological limitations and did not intercept many Scuds at all, its deployment did avert Israel from launching retaliatory strikes against Iraq which could have seriously fractured the US-led coalition.[43] By filling this role TMD development and deployment was legitimised, not merely as a necessary element in modern warfare, but indeed an essential one. The ideological debate over NMD is much more fractured.

With few exceptions NMD tests to date, conducted under ideal conditions, have been dismal failures.[44] Exceptions occurred on 14 July and 4 December 2001. The 14 July test

was only a "qualified" success whilst the 4 December test is yet to be fully scrutinised, although the Pentagon has proclaimed all tests as successful based on the ability to learn so much even from a failure.[45] Discrimination (the ability to distinguish real warheads from decoys) is by far the most complex and controversial technological hurdle to be overcome.[46] However, at present all elements of the proposed system are yet to be proven as technologically feasible with even reliable tracking and monitoring of a target often eluding currently available technologies. It was exposed by *Defence Week* that the warhead hit by a Pentagon missile during the 14 July test was carrying a global positioning satellite beacon that made it easy to track. Critics say that the missiles would have had little chance of pinpointing the warhead's path without the help of the beacons.[47] *Defence Week* also reported that the beacon helped the defence missile compensate for deficiencies in US radar tracking technology on the ground. To this end, opponents liken the enormous technical challenges of NMD to "attempting to hit a bullet with a bullet".[48] As evidence of the technical difficulties confronting the project many point to a decision on 15 December 2001 to cancel the multi-billion missile defence system for Navy ships occurring due to poor performance and excessive cost.[49] Opponents of NMD cite this as an example that goes some way to proving that getting such a complicated system to work even in the most simple circumstances is at present doubtful.

The future test program is fluid and is to incorporate at least 15 more tests, and the system could become operational, however unlikely,[50] as early as 2005. Many consider it nonsensical to deploy an inadequately tested defensive system before any clear offensive threat is realised virtually guaranteeing that any threat which subsequently appears will be able to penetrate the system. Missile intercept systems will be incapable of keeping pace with improvements in offensive capabilities.[51] Regardless, the NMD projects future was guaranteed when on 14 December 2001 Congress allocated $343 billion dollars to fully fund NMD.[52]

Reasons For and Against NMD deployment

The reasons for controversy over the proposed deployment of an NMD can best be shown by considering the US political arguments advocated by the two major schools of thought. Indeed these arguments are largely representative of those being voiced by both opponent and supporter around the world. Supporters of NMD, largely Republicans, justify their argument on a real national security need, that being, to protect the US from direct ballistic missile attack. They cite the existence of politically unstable "rogue states" which as "nuclear equipped adversaries will not always [act] rationally or at least operate with the same logic" as the US does.[53] Arms controllers, namely Democrats,[54] consider that the solution to any security threat facing the US lies not in a costly NMD system, but instead through securing reductions in global nuclear arsenals through the strengthening of bilateral agreements, such as START and the ABM, and consider it of vital importance to improve US-Russian relations.[55] Anti-NMD advocates argue that these goals would be seriously threatened if NMD was approved and that the outcome of such a decision may be a renewed global arms race of Cold War magnitude.

French President Jacques Chirac, a vocal opponent of NMD deployment, expressed exactly this concern saying:

> *How do you convince (nations) to stop piling up new arms when more powerful countries say it's necessary to develop technologies that put hard-won strategic balances into question?* [56]

He added to the debate when, during an interview with the *New York Times* on 17 December 1999, he observed:

If you look at world history, ever since men began waging war, you will see that there's a permanent race between sword and shield. The sword always wins. The more improvements that are made to the shield, the more improvements that are made to the sword. We think that with these [NMD] systems, we are just going to spur swordmakers to intensify their efforts.[57]

Supporters counter this argument by emphasising that defences would reduce the utility of enemy missiles, deterring their acquisition.[58] Each argument has merit and will be addressed in greater detail.

Supporters of NMD draw largely on the truism that the global missile threat to the US is growing. The nuclear club of nations now, largely as a result of the collapse of the Soviet Union, includes some two dozen states, many of which are at present highly politically unstable and unpredictable.[59] This concern is doubled with the fact that the range of ballistic missiles is currently increasing, suggesting that shortly many of these volatile states may develop deployment systems capable of reaching the US, which, when combined with a political will to strike, poses a real concern. Nations such as North Korea, Iran and Iraq have been identified by advocates of NMD for these reasons as possible "rogue" states. It is currently anticipated that North Korea will become capable of posing such a threat to the US by 2005, Iran by 2010 and Iraq by 2015.[60] In 1998 a Congressionally mandated commission led by former US Secretary of Defence Donald H. Rumsfeld produced a report which overwhelmingly confirmed the concerns of the pro-NMD lobby.[61] Rumsfeld was highly critical of the US intelligence community which anticipated that it would have at least a decade's prior notice before any such missile threat materialised.[62] Rumsfeld's report warned that missiles could appear much sooner. This criticism of the intelligence community is not historically unfounded and precedent for such concern exists dating from the earliest periods in nuclear history. For example, the intelligence community seriously underestimated the USSR following the first atomic detonation in 1945. At this time military planners anticipated that the Soviets would take a decade to produce a similar weapon. Instead, by 1949 the Soviets detonated their own bomb and thus nullified any strategic advantage enjoyed by the US. This action-reaction dynamic typified the entire Cold War period and goes some way to demonstrating the potential dangers of underestimating any potential foe.[63]

This argument can also be used by opponents of NMD. To date, throughout the nuclear era, Washington has gained no discernible diplomatic or strategic advantage through its technological innovations, primarily because the Eastern Bloc has very quickly matched, copied or developed countermeasures. The same, it is argued, will quickly occur to counter the effectiveness of any deployed NMD system, therefore nullifying its existence and success. Perhaps the most obvious means of countering NMD is through rearmament, by developing greater numbers of ballistic weapons, new delivery systems and decoys so as to overwhelm any shield established by the US. This would mean the shaking off of related arms-limitations treaties in a world that can ill-afford such action. This is predominantly what the anti-NMD camp fears with justification.

The implication of NMD for outer space has been afforded little attention, yet will pose one of the greatest avenues for instability.[64] Currently, outer space is a weapons free environment "supported by a limited regime (the Outer Space Treaty)[65] and a number of tacit agreements against weaponisation".[66] US deployment of an NMD is heavily reliant on space-based components. However, presently there exists no treaty banning anti-satellite (ASAT) weapons and therefore a key vulnerability in the NMD network is presented when possible responses by US opponents are

considered. The militarisation of space, it is argued, could inhibit future manned, scientific and commercial activities in space, as well as US arms control monitoring capabilities.[67]

The vulnerabilities inherent in NMD deployment add to the arguments against NMD. Compared to offences, sophisticated defences are much more vulnerable to attack because of their reliance on forward-based tracking installations and space-based components. The task of the defender is far more difficult than that of the attacker. At each step in an NMD process the defender is vulnerable to possible mistakes and to attacks on system components.[68] Furthermore, the timeframe during which Bush will deploy NMD will allow considerable time for adversaries to "size-up" the system and develop means of subverting it. Many argue that should Bush continue to insist on flouting the ABM Treaty and "this coincides with an increase in US-Russian or US-Chinese tensions...It might also include multinational approaches, as states feeling threatened by the system may begin to coordinate their military responses in the classic form of a preventative alliance".[69] In such a scenario, Russia could provide China with the technology to develop manoeuvrable warheads to enhance their capabilities.[70] This fear is already becoming a reality as seen through the signing of a "Good Neighbourly Treaty of Friendship and Co-operation" on 16 July 2001 between China's President Jiang Zemin and Russian President Vladimir Putin. This treaty superseded an outdated 1950 version and committed both Russia and China to a further 20-year pact. Also, North Korean leader Kim Jong-il has recently visited Russia for bilateral talks with President Putin.[71]

Likely Military Responses to NMD Deployment Including Russia and China

Potential adversaries will react to US NMD deployment differently depending on their own circumstances. For Russia, the most logical response would be to stop de-MIRVing its ICBMs as it is currently doing under the present disarmament framework.[72] This move was confirmed when, following summit talks in Slovenia during July 2001 with President Bush, President Putin expressed "that despite it being in violation of the START II agreement, Russia would strengthen its nuclear forces in response to US NMD and could eventually counter an American defence system by implementing multiple warheads on its ICBMs".[73] This response, in reality, will culminate in a breakdown in the disarmament process but little increase in numbers of missiles. This is because Russia already has enough warheads to overwhelm the proposed system.[74]

China is staunchly opposed to the deployment of NMD or TMD both in America and East Asia. Many analysts within the US and abroad argue that the NMD initiative is prompted, not by a threat from "rogue states" but instead by a perceived "China threat".[75] China only has a small stockpile of missiles, [76] and it is this fact that poses greatest concern for China when it comes to the US NMD deployment. On 2 September 2001 it was alleged by the *New York Times* that the White House had told the Chinese that it would not object to China's plan to expand its limited arsenal of nuclear missiles if support for its NMD proposal was forthcoming. However administration officials have since rejected the report reaffirming their commitment to reducing the global arms stockpile.[77] Condoleezza Rice, President Bush's national security adviser, said the US "is not about to propose to the Chinese that in exchange for Chinese acceptance of MD, we will accept a nuclear buildup" adding that while Washington does not believe the Chinese have reason to expand their nuclear forces, "their modernisation has been under way for some time". One senior official added: "We know the Chinese will enhance their nuclear capability anyway, and we are going to say to them, `We're not going to tell you not to do

it'".[78] Also, The Bush administration plans to offer China an early look at plans for testing the proposed NMD system in an effort to ease Beijing's opposition to the US shield.[79] Clearly, China would be prompted to more actively pursue options such as mobile missiles and MIRVs and many believe that should deployment occur a "head on collision with China will be difficult to avoid".[80]

Hence, in response to NMD deployment, it can be surmised that large and technologically capable states will seek "step level" increases in sophistication and modest increases in the number of launchers. Middle powers, such as North Korea, may seek numerical increases in ballistic missiles, especially where these can also be used to counter local adversaries, whilst smaller states will build a few weapons but will be unable to afford a sustained build-up. All of these adversaries, it is anticipated, will turn to penetration aids to ensure the success of the missiles they have. Less technological states posing a threat to the US may find it most beneficial to turn to asymmetric responses.[81]

This course of action has already been alluded to by senior Chinese diplomats and military specialists who emphasise that China may pursue an "Andropov solution" (building countermeasures) in response to any US NMD deployment.[82] The Andropov solution would be more economical with some Chinese arguing that they could develop countermeasures to the US NMD system "at a cost of two *per cent* of their defence budget. At the same time, they had heard that the US system would cost two *per cent* of the US defence budget. Given the huge disparity between the two budgets, they asked, were they not getting the better end of the bargain?"[83]. As long as countermeasures proved effective no strategic build-up would be necessary to overwhelm the US system.[84]

The primary reason why penetration aids will prove attractive to US adversaries is that they are inexpensive and do not require advanced technology. They also do not violate any international treaties or agreements and as they are not categorised as "weapons" are politically favourable.[85] Further, penetration aids will prove highly effective against NMD. Recent US NMD tests have proven that dealing with large numbers of decoys will severely inhibit the system.[86] Hence, even if a global proliferation of ballistic missiles does not occur, a build-up of penetration aids, which may render the NMD system ineffective, will. The problems faced by the current NMD system when discriminating warheads from decoys has already been mentioned.

The NMD system and its elements could also be exposed to potential attack from the ground, sea and in space by adversaries. Many of its elements are susceptible to attack especially the forward based radar in Alaska and those facilities to be located on foreign soil such as in the UK and Greenland.[87] For example, air strikes or special forces operations,[88] or terrorist attack, could inflict a substantial blow against the NMD system. A low yield nuclear attack on any of the remote elements would be impossible to defend against.[89] This vulnerability could increase the demand for tactical nuclear missiles among NMD opponent states some of whom, especially those with fewer resources, may focus on sea launch and cruise missile capabilities which would not be able to be defeated by the NMD umbrella. Also, the sea-based elements of the system which are to be carried by the *Aegis*-class destroyers may result in an increased procurement and development of quiet submarines, of the type now widely available from Russia.[90]

Space-based components, critical to any NMD system, are particularly vulnerable to attack with opponents only having to be capable of launching medium-range ballistic missiles with some accuracy to attack these assets. Low Earth Orbiting (LEO) satellites are most vulnerable and due to their tracking and queuing taskings would be a high priority target.[91] Hence, direct ascent ASAT weapons

would become a likely focus for some states as a counter to NMD and would be capable of blinding the system and rendering it inoperative. Co-orbital and permanent space based ASATs may also see deployment especially as these weapons (unless nuclear armed) do not represent any direct violation to any standing agreements on weapons in space.[92] Should the US deploy NMD and shrug off the ABM, it would have no grounds for objecting to space-based weapons being deployed in large quantities. Furthermore, in an effort to undermine the US NMD system Russia could sell ASATs with impunity to China, India, Iraq, or other states of its choosing. Such weapons could also be nuclear armed offering considerably greater range and impact, although this would violate the Outer Space Treaty. Once deployed ASATs could render near earth space unusable for civilian or passive military use. Some ardent pro-NMD supporters in the US continue to press for space-based interceptors (Brilliant Pebbles) which would only encourage states to develop and deploy countermeasures and would counter any agreements aimed at the demilitarisation of space.[93]

Regardless, the most likely focus of "rogue" states to NMD will be in the form of asymmetric military responses. The asymmetric response is appealing due to the fact that weapons are inexpensive and unlike ballistic missiles, which are highly transparent and easily detected, are best suited for stealthy attack. A state would merely need a means of delivery, (not necessarily a missile) such as a suitcase bomb smuggled in vehicles or by foot, small aircraft, small boats or other means, to attack the US. Even terrorists lacking any state backing have been capable of launching internal attacks on the US through this means, as in the case of the World Trade Centre attacks in New York and on the Pentagon.[94]

This is not to say that missiles can not feature in any asymmetric response. Cruise missiles, easily available off the shelf,[95] would be highly effective and not easily detected especially if deployed on a commercial vessel in international waters off the coast of the US. Short-range ballistic missiles could also be launched in a similar fashion with little chance of detection by any planned NMD system.[96] Other options may include delivery of a weapon on a rubber raft, or another vessel which is hard to detect, as occurred in the USS *Cole* incident in Yemen.[97] One senior member of the Bush administration readily admitted during a conference in 1999 that "he expects NMD to cause "the bad guys' to redouble their efforts to acquire asymmetrical means of attacking the US homeland or US allies and their assets.[98] Hence, it is very likely that NMD will fuel development of WMD and less traceable means of delivery. Advocates of NMD argue that such developments are "inevitable" and that the US would be better off with at least some means of self-defence against missile attack. Asymmetric means of attack will mean that many states will respond to NMD deployment by "spending on areas where they believe the US to be vulnerable".[99] This will prove taxing on the US military and enforcement agencies and may see opponents exacerbating the situation by testing US bases and defences.[100] Moreover, it is likely that "rogue" states and terrorist groups will be likely to receive "more assistance in their efforts if US NMD policy is conducted in a way that alienates either Russia or China, or both". These countries are in a "good position to assist third countries in their efforts to acquire alternative delivery systems and weapons" in an effort to undermine the US NMD.[101]

Conclusion

It appears likely that the response of other states to NMD deployment would be limited mainly to reactive missile deployments and a build-up of penetration aids. However, any NMD deployment by the US will be met by some certainties, these being that NMD is unlikely to revolutionise the strategic

environment or render offensive weapons obsolete, and that it will be met by active military countermeasures from a variety of states, dependant on each state's unique circumstances. It may also trigger action-reaction dynamics and lead other states into unilateral arms build-ups; and, NMD is likely to increase rather than reduce the worldwide armaments stockpile.[102] It will also complicate the future international environment for arms control and increase world tensions. The militarisation of space would also make the peaceful use of space, especially for arms control monitoring, very difficult.

It can clearly be seen that NMD deployment will open a Pandora's box of uncertainty for which the global community is unprepared and which it is largely unwilling to accept. Although the system faces many technological challenges it appears likely that some "limited" NMD system will be deployed by Bush in his first term of office. It is felt that this system, like the earlier "Safeguard" NMD, will be a "rush to failure". Not only will the system, at present, fail technologically, but also hard-won non-proliferation agreements will be reneged on and any groundwork which has been made in arms control lost.

NMD is not without its alternatives. A US attempt at promoting international cooperation and non-proliferation regimes as an attempt at missile proliferation, instead of the isolationist path currently being taken through NMD, would be a much more permanent and positive method of addressing the US security concerns. Also, the long standing US policy, commonly referred to as "deterrence", has served the US well for years and no evidence suggests that it would not continue to work against "rogue states" or terrorists.[103] Treaty compliant missile defences aimed at TMD, offensive arms reductions within the framework of existing treaties such as SALT, strengthening of the Missile Technology Control Regime (MTCR),[104] and the negotiation of an ASAT-ban for the demilitarisation of space would be much more positive steps than the deployment of a contentious NMD.[105] Such measures, in the longer term, may also result in a global armaments reduction thereby nullifying any need for an NMD.

This article has not sought to address the standpoint of US allies, particularly in Europe and Asia. However, it can be said that all hold reservations toward NMD and oppose any deployment that violates the ABM Treaty.[106] This was also the stance of the United Nations General Assembly when on 5 November 1999 it voted overwhelmingly in favour of a resolution to preserve the ABM Treaty.[107] There is little popular support for a system which, whilst possibly offering the US increased security within a unilateral framework, will expose her allies and alliances especially NATO to a new, dangerous and uncertain world.[108] These sentiments were echoed by former Australian Prime Minister Malcolm Fraser who warned that participation in NMD would make countries like Australia "hostage to US actions" and "a first-rate target in the event of hostilities between America and another country".[109] NMD deployment by the US could lead to regional and even global arms races, polarising the world anew and making enemies of countries that are now at worst only competitors".[110]

NOTES

1. John Isaacs, "A Political Decision", in *Bulletin of Atomic Scientists*, March/April 2000, p. 23.
2. Michael O'Hanlon, "Star Wars Strikes Back", in *Foreign Affairs*, November/December 1999, p. 71.
3. http://www.stopstarwars.org. (Green Peace Website).
4. James Clay Moltz, "Forecasting the Strategic-Military Implications of NMD Deployment", in *International Perspectives on Missile Proliferation and Defenses*, Occasional Paper No. 5 (Monterey: Montery Institute of International Studies, March 2000), p. 35.
5. http://www.abc.net.au/4corners/roguestate.
6. Ronald E. Powaski, *Return to Armageddon: The United States and the Nuclear Arms Race,*

1981-1999, New York: Oxford University Press, 2000, pp. 32-33.
7. http://www.abc.net.au/4corners/roguestate.
8. *Bulletin of Atomic Scientists*, March/April 2000, p. 23. On 23 March 1983, President Reagan delivered a national television address in which he called for research into defences that would make "nuclear weapons impotent and obsolete". On 24 March 1983, opponents in Congress labelled President Reagan's vision of a defensive umbrella "Star Wars". See also, http://www.abc.net.au/4corners/roguestate.
9. In particular there was a substantial Soviet build-up of penetration aids such as chaff, balloons and dummy missiles in response to "Star Wars".
10. *Bulletin of Atomic Scientists*, March/April 2000, p. 23.
11. There have been three system developments since the late 1950s. These being the ABM-1/A-135, ABM-2/S-225 and the most recent, commenced in 1978 and operational in 1989, the ABM-3/A-135. www.fag.org/starwars/program/soviet.
12. http://news6.thdo.bbc.co.uk/hi/english/world/europe/newsid_1177000/1177889.stm, and http://www.dfait-maeci.gc.ca/foreignp/usstrat-e.asp
13. John Steinbruner, "National Missile Defence: Collision in Progress", in *Arms Control Today*, November 1999, p. 3.
14. Powaski, *Return to Armageddon*, pp. 32-33.The plan allowed three years for development of NMD and, if warranted, three more years to deploy a system. pp. 190-91.
15. John Steinbruner, "National Missile Defence: Collision in Progress", p. 3.
16. http://www.abc.net.au/4corners/roguestate. See also note 46.
17. *Bulletin of Atomic Scientists*, March/April 2000, p. 24. The Capability 3 system will also comprise 3 command centres, 5 communications relay stations, 15 radars (6 early warning and 9 high resolution UHF or X-band), and 29 satellites (Space Based Infrared High and Low). See also Colonel Daniel Smith, USA (Ret.), "Technological Challenges in National Missile Defense" [? 2001] at http://www.abc.net.au/4corners/roguestate.
18. ibid. Own emphasis added.
19. ibid.
20. Michael E. O'Hanlon, *Defence Policy Choices for the Bush Administration 2001-05*, Washington D.C: Brookings University Press, 2001, p. 145.
21. http://www.abc.net.au/4corners/roguestate.
22. ibid.
23. ibid.
24. O'Hanlon, "Star Wars Strikes Back", *Foreign Affairs*, November/December 1999, p. 71.
25. http://www.stopstarwars.org.
26. ibid.
27. Guardian Newspapers Limited 2001 at http://www.commondreams.org/headlines01/0713-01.htm.
28. ibid.
29. http://www.abc.net.au/4corners/roguestate.
30. ibid.
31. ibid.
32. Michael E. O'Hanlon, *Defence Policy Choices for the Bush Administration 2001-05*, p. 154.
33. *Bulletin of Atomic Scientists*, March/April 2000, p. 24.
34. Powaski, *Return to Armageddon*, p. 189. See also, http://www.stopstarwars.org.
35. *International Perspectives on Missile Proliferation and Defenses*, Occasional Paper No. 5, p. 34.
36. Daniel Smith, "Technological Challenges in National Missile Defence" [2001 ?] at http://www.abc.net.au/4corners/roguestate.
37. ibid.
38. O'Hanlon, "Star Wars Strikes Back", *Foreign Affairs*, November/December 1999, p. 82.
39. ibid., pp. 68-69.
40. ibid., pp. 68-69.
41. ibid., pp. 68-69.
42. Michael E. O'Hanlon, *Defence Policy Choices for the Bush Administration* 2001-05, pp. 143-44.
43. ibid., pp. 143-44.
44. Daniel Smith, "Technological Challenges in National Missile Defence" [2001 ?] at http://www.abc.net.au/4corners/roguestate.
45. ibid.
46. ibid.
47. http://www.abc.net.au/4corners/roguestate. Exposure of US authorities rigging tests for ideal conditions should come as no real surprise. On 10 June 1984, under the Reagan Administration, an interceptor package guided by infrared sensors and a computer destroyed its target in a similar fashion. In this instance the General Accounting Office in 1994 noted in its report that the target had been artificially heated to increase its infrared signature.
48. ibid., This analogy has been asserted since 1955 when, after 50,000 simulated ballistic missile intercepts on an analog computer, Bell Laboratory scientists concluded that "hitting a bullet with another bullet" was possible. Although not valid today this test gives some perspective of how long the NMD testing and debate has been underway in the US.

49. http://www.abc.net.au/4corners/roguestate.
50. In February 1998 the first Welch review criticised shortcomings and overambitious time lines that amounted in its findings to a "rush to failure" in various missile programs including NMD. See *Foreign Affairs*, November/December 1999, p. 73.
51. John Steinbruner, "National Missile Defence: Collision in Progress", in *Arms Control Today*, November 1999, p. 3.
52. http://www.abc.net.au/4corners/roguestate.
53. Stated in May 1992 by the House Armed Services Committee Chairman Les Aspin. http://www.abc.net.au/4corners/roguestate.
54. See also page 3 for an explanation of why Clinton, a Democrat, launched NMD projects.
55. *Foreign Affairs*, November/December 1999, pp. 69.
56. http://www.stopstarwars.org.
57. *Bulletin of Atomic Scientists*, March/April 2000, p. 25.
58. *International Perspectives on Missile Proliferation and Defenses*, Occasional Paper No. 5, p. 35.
59. *Foreign Affairs*, November/December 1999, p. 70.
60. ibid., pp. 70-71.
61. Rumsfeld has reassumed the appointment of Secretary of Defence under the current Bush Administration.
62. ibid., pp. 70-71. In November 1995, a National Intelligence Estimate (NIE 95-19) judged that "No country, other than the major declared nuclear powers, will develop or otherwise acquire a ballistic missile in the next 15 years that could threaten the contiguous 48 states or Canada".
63. *International Perspective's on Missile Proliferation and Defenses*, Occasional Paper No. 5, p. 33.
64. ibid., pp. 33-34.
65. The treaty opened for signature at Moscow, London and Washington on 27 January 1967 to "contribute to broad international co-operation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes". See, http://www.iasl.mcgill.ca/space_law/conventions/outerspace.html.
66. *International Perspective's on Missile Proliferation and Defenses*, Occasional Paper No. 5, p. 33-34.
67. ibid., pp. 33-34.
68. ibid., p. 34.
69. ibid., pp. 34-35.
70. ibid., pp. 34-35.
71. Dr. Bruce Blair, "Impact of NMD on Russia, Nuclear Security" [2001?], http://www.-abc.net.au/4corners/roguestate.
72. *International Perspectives on Missile Proliferation and Defenses*, Occasional Paper No. 5, p. 35-36.
73. Dr. Nicholas Berry, "U.S. National Missile Defense: Views from Asia" [2001?], at http://www.abc.net.au/4corners/roguestate.
74. Peter Van Ness, *Ballistic Missile Defenses: A Response*, (Canberra: ANU, 1999), p. 2.
75. ibid., p. 2.
76. ibid., p. 2. The International Institute for Strategic Studies notes that "China's strategic capability is comprised of less than 200 nuclear warheads, of which perhaps 20-30 would be operational at any given time".
77. Robert Burns, "US Says China Nuke Buildup Unnecessary", *Associated Press*, 5 September 2001, on internet at National Missile Defence Organisation http://www.acq.osd.mil/bmdo/bmdolink/html/ nmd.html.
78. No author, "China to See U.S. Missile Plan", *Washington Post*, 2 September 2001 at http://dailynews.yahoo.com/h/ap/20010902/pl/us_china_4.html.
79. ibid.
80. Peter Van Ness, *Ballistic Missile Defenses: A Response*, (Canberra: unpublished, 1999), p. 2.
81. These include the use of weapons, other than ballistic missiles, such as conventional explosives, or biological and chemical weapons, against the US. *International Perspective's on Missile Proliferation and Defenses*, Occasional Paper No. 5, p. 36.
82. Rose Gottemoeller, "If China Builds More Warheads", *Washington Post*, 6 September 2001, p. A23 at http://www.washingtonpost.com/wp-dyn/articles/A48967-2001Sep5.html. "In the 1980s, faced with the necessity of responding to the Reagan administration's 'Star Wars' initiative with an economy that was already in crisis, the Communist Party general secretary, Yuri Andropov, decreed an approach that was an innovation in Soviet policy at the time: Instead of trying to match U.S. strategic defenses or engage in a strategic offensive buildup, as had been past practice, the Soviet Union would concentrate on developing countermeasures to the system – chaff, balloons and other technologies that would defeat the system without destroying it. In that way, Andropov argued, he could maintain Soviet security on the cheap, without having to match or mirror U.S. programs".

83. Rose Gottemoeller, "If China Builds More Warheads", at http://www.washingtonpost.com/wp-dyn/articles/A48967-2001Sep5.html.
84. ibid.
85. *International Perspective's on Missile Proliferation and Defenses*, Occasional Paper No. 5, p. 36.
86. ibid., p.37.
87. ibid.
88. North Korean commandos have infiltrated South Korea with ease for years despite the best efforts of the US and South Korea to prevent them. And terrorists have struck deep within the heart of US territory. See also notes 91 and 94.
89. *International Perspectives on Missile Proliferation and Defenses*, pp. 37-38.
90. Such as the Kilo-class 636 model.
91. *International Perspectives on Missile Proliferation and Defenses*, pp. 38-39.
92. The USSR conducted tests in the 1960s and 1970s on a space-based ASAT weapon leading the US to declare it "operational".
93. *International Perspectives on Missile Proliferation and Defenses*, p. 39.
94. The first attack occurred on 26 February 1993 when a vehicle loaded with explosives was detonated beneath the complex killing six people, injuring thousands and causing extensive damage. On 11 September 2001 the complex was completely destroyed when terrorists hijacked two commercial aircraft crashing them into the towers killing a yet to be disclosed number of people. The Pentagon was also attacked in the same fashion.
95. Examples of conventional missiles (cruise and other) which are widely held and capable of such tasking are the Soviet SA-2,3,6,10 and 12, the SS-18, SS-24, and SS-25 and the Scud. In America the D-5, Tomahawk and Harpoon. To name but a few amongst hundreds.
96. *International Perspectives on Missile Proliferation and Defenses*, p. 40.
97. The *USS Cole* suffered severe damage on 12 October 2000 in a terrorist bombing attack when the ship was in the port of Aden, Yemen, for a routine fuel stop. A rubber raft loaded with explosives was ploughed into the ship killing 17 sailors and injuring 39 in the blast which blew a hole in the port side of the destroyer. http://www.chinfo.navy.mil/navpalib/news/news_stories/cole.html.
98. *International Perspectives on Missile Proliferation and Defenses*, p. 40.
99. ibid., p. 41.
100. The recent attacks on the World Trade Centre in New York and the Pentagon in Washington D.C have stretched US military and enforcement agencies (i.e. FBI, Fire Brigade and Police Forces) to the limit, and were not anticipated by the US intelligence agencies. Therefore what hope would the US have of preventing strikes against NMD elements on foreign soil let alone on their own? NMD will be incapable of addressing these real threats. See also footnotes 82, 88 and 91.
101. *International Perspectives on Missile Proliferation and Defenses*, p. 41.
102. ibid., p. 41.
103. Peter Van Ness, *Ballistic Missile Defenses*, p. 3.
104. The MTCR is an informal political arrangement formed in 1987 to control the "proliferation of rocket and unmanned air vehicle systems capable of delivering weapons of mass destruction and their associated equipment and technology. The Regime's controls are applicable to such rocket and unmanned air vehicle systems as ballistic missiles, space launch vehicles, sounding rockets, unmanned air vehicles, cruise missiles, drones, and remotely piloted vehicles". MTCR also has considerable range limitations. http://www.state.gov/www/global/arms/np/mtcr/mtcr.html.
105. Rear Admiral Eugene J. Carroll, Jr., USN (Ret.) "Why Should You/We Care?" at http://www.abc.net.au/4corners/roguestate.
106. Peter Van Ness, *Ballistic Missile Defenses*, pp. 4-5. See also, http://www.abc.net.au/4corners/roguestate.
107. Peter Van Ness, *Ballistic Missile Defenses*, p. 4.
108. Jeremy Stoker, "Briefing Missile Defence", in *Janes Defence Weekly*, 22 August 2001, pp. 23-25.
109. Christopher Hellman "The Costs of Ballistic Missile Defense" [2001?] at http://www.abc.net.au/4 corners/roguestate.
110. Peter Van Ness, *Ballistic Missile Defenses*, p. 5.

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Rose Gottemoeller, "If China Builds More Warheads", Washington Post, 6 September 2001, p. A23 at http://www.washingtonpost.com/wp-dyn/articles/A48967-2001Sep5.html.

http://www.chinfo.navy.mil/navpalib/news/news_stories/cole.html.

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Dissecting Command and Control with Occam's Razor or Ask not what "Command" and "Control" means to you but what you mean by "Command and Control"

By Dr Noel Sproles, University of South Australia

Command and Control (C2) provides coordination and smooth functioning in a military operation, but as a topic it more often than not causes confusion and disagreement amongst military professionals. One such cause for confusion is the view that "command and control" is a phrase and that an examination of its constituent words can contribute to an understanding of what command and control really is. The result is rarely satisfactory and leads one to ponder why it is that two such familiar words should develop such difficult-to-understand concepts when grouped together in this way? More often than not, the explanations offered seem more forced than logical and are never very enlightening. They bring to mind the scene in an ancient temple where priests and seers pore over the entrails of an animal in an attempt to read the future or ascertain the meaning of some natural phenomenon. The only certainty in this approach is that if a particular meaning is sought, then that meaning can be contrived.

A more fruitful approach may be to recognise that every word or expression in our language has a history commencing from the time when someone, somewhere, first associated it with something. This history, which traces the development of a word or expression from its inception through any subsequent derivations, is called its etymology. Treating "command and control" simply as a phrase while neglecting to study its etymology is ignoring an approach that promises to offer a more edifying explanation of the term than those usually provided.

This article suggests a possible etymology for "command and control" commencing from its roots in the efforts to achieve unified command amongst the Western Allies in WWII. It will show that terms that could well be the precursors of "command and control" appear throughout the literature surrounding the command arrangements instituted by the Allies from 1941 onwards. Placing the usage of the separate words "command" and "control" in the context of those times will show that the meanings attributed to them in the 1940s are different from those currently given them when associated with "command and control". Although "command and control" started out as a phrase sometime in the 1940s, it will be suggested that it has evolved to become a compound word and should now be treated as such. While it is not suggested that the explanation that will be offered can claim to be definitive, it is supported by strong historical evidence. In providing a simpler explanation of what this term means, based on its etymology, it is suggested that it also provides a more plausible explanation than those usually found in the literature.

Origins

There seems to be agreement that "command and control" appeared either during or sometime soon after WWII. While Ashworth (1987, p. 34) suggests that it had its origins in WWII, Alberts and Hayes (1995, p. 6) is more emphatic in noting that the term did not appear until after WWII. It is difficult to argue with the contention that "command and control" is a post-WWII term as a search of the literature contemporaneous to WWII has so far failed to reveal its use before 1945. The earliest mention found in the search for background material for this article was by General Morgan who was responsible for much of the early planning for the Normandy invasion. When discussing the issue of directives to the naval and air Commanders-in-Chief for Operation *Overlord*, he made reference to "...the solution to the air command and control problem" (Morgan, 1950, p. 226). Murphy (1948, p. 146) refers to Admirals Ramsay and Mountbatten in 1942 disagreeing on who "...should be in command and control of the Naval Assault Forces during their training in Combined Operations". While Murphy (1948) indicates an early date for the use of the term, it is possible that Morgan (1950) presents proof of even earlier use as the Forward to Morgan (1950) was signed and dated by General Eisenhower in March 1947. Whichever one is the earlier may be open to dispute but what is clear is that the term "command and control" was in use in the period immediately after WWII leaving it open to the possibility that it was in fact in use during the war.

Its usage in the immediate post-war era was not as popular as it is now. For instance, Wilmot (1952, p. 51) when discussing the German attacks on the British radar and communications installations during the Battle of Britain, refers to them as attacks on "...the network of control". It is almost certain that a present-day writer would refer to them instead as attacks on command and control. However, references can still be found to "command and control" in the literature of this period. McCarthy (1959, p. 15) referred to the agreement "...between Britain and America regarding the machinery to be set up for the strategical command and control of their military resources". That McCarthy did not feel it necessary to explain this term either in the text or in footnotes indicates that he expected it to be a term familiar to the reader. The term "command and control" was used in the 1964 film *Dr Strangelove* by George C. Scott acting the part of the US Chairman of the Joint Chiefs of Staff thereby suggesting that by then it was a widely accepted expression.

While there may not be evidence that the term "command and control" *per se* was used during the war years, there is ample evidence that expressions closely resembling it were in common use during that period. In a letter from the RAAF Chief of Air Staff to General Macarthur's HQ early in 1944, reference is made to "command and administrative control" (Odgers, 1957, p. 199). The Australian Prime Minister, Mr. John Curtin, in a 1945 letter to General MacArthur twice made reference to "operational control and command", once in relation to 1st Australian Corps (Long, 1963, p.45) and secondly in relation to the RAAF (Odgers, 1957, p. 437). Again, in 1945 the Australian Defence Committee referred to the need for "...unified operational and administrative control of the whole RAAF ...under one command" (Odgers, 1957, p. 438).

The terminology was not restricted to US and Australian usage. Stacey (1948, p. 48) associates "command" with "operational direction" when discussing the internal command arrangements for 1st Canadian Corps. "Direction" and "control" are synonymous and the phrase "command and direction" was used when now "command and control" would be used. Field Marshal Montgomery provides evidence of this when in October 1945, he stated "On 1 September, the

Supreme Commander assumed command and direction of the Army Groups himself..." (Montgomery, 1945, p.12). When he referred to the same event some years later, he changed "direction" to "operational control" when he wrote "...from the 1st September 1944 onwards, I was not satisfied that we had a satisfactory organisation for command or operational control" (Montgomery, 1958, p. 326).

The German General, Adolf Galland, describes the amalgamation of the *Luftwaffe* day fighter and night fighter control systems late in WWII. He states that "The unification of command and organisation of the day and night fighters ...was at last achieved" (Galland, 1955, p. 193). Whether the term "command and organisation" was used by Galland or was the translator's interpretation of the original German is not known, but its intent and usage is that usually associated at that time with "command and control".

Command Arrangements

In the instances quoted, the terms "command and control", "command and operational control", "command and administrative control", "command and direction", and even "command and organisation" are referring to command arrangements. This supports the view of Ashworth (1987, p. 34) that "command and control" originated to "...cover a set of procedures related to the control of joint and combined operations". The high degree of unification of command and integration of staff functions that was achieved during WWII by the Western Allies, particularly at theatre level, created an intense interest in what Ashworth (1987, p. 34) referred to as "...the exercise of command across organisational boundaries...". It became necessary to implement command arrangements that were the formal basis for establishing at the very least a minimum level of cooperation to be achieved in the pursuit of unity of effort between a unified commander and subordinate commanders of a joint or multi-national force. These command arrangements established the operational and administrative constraints or boundaries placed on the unified commander's authority. When establishing the origin of the meaning of "command and control", the effects of this overriding need to achieve unified command arrangements across organisational boundaries must be kept in mind. These arrangements encompassed not only procedures but also political decisions on the nationality and Service of Allied commanders.

Modern definitions of command and control describe "command" in terms of a commander's authority. A typical example is that given by the US Marines who see the "command" component of the term "...as exercise of authority"(MCDP 1996). While the WWII commanders would have been aware of this nexus between command and authority, it is suggested that this is not the meaning that they were referring to when using expressions such as "command and operational control". In the context in which the expression was used, they were referring instead to the identity of the individual commander, to his nationality, or to his Service. In that era when great multi-national operations were being mounted, the nationality of a commander was often a politically significant issue, as indeed it still is. Churchill (1952, p. 76) illustrates the delicacy of such issues as nationality when he records that as the US provided the unified commander in Africa, then the British should provide the commander for Operation *Overlord*. This was then overruled when it was realised that the US would have the preponderance of troops in Europe in 1944 and so "...an American commander should be appointed for the expedition to France". To placate British public opinion, it was agreed that all the subordinate Commanders-in-Chief would be British. While General Montgomery acted as land commander for the initial period of the

invasion, US public opinion would not accept a British officer as land commander over the US Army Groups for the remainder of the campaign (Sixsmith, 1972, p. 157). General Eisenhower's deputy commander and chief of staff for the Allied invasion of North Africa had to be Americans "...to create the impression that the liberation of French Africa was an American, not a British venture..." (Bryant, 1957, p. 498). The degree of political sensitivity surrounding the nationality of the commanders is further illustrated by Burns (1970, p. 182) who wrote about the concern of Churchill's staff at the appointment of General Wavell, a British officer, as Supreme Allied Commander of ABDA (American, British, Dutch, Australian) Command in 1942. It was their concern that "...Wavell was slated to be a British scapegoat who would preside over a rapidly disappearing command". The boot was on the other foot when Churchill (1968, p. 659), following the 1943 US defeat at the hands of Rommel at the Kasserine Pass in Tunisia, said:

> *What a providential thing it was that I perpetually pressed for General Eisenhower to take the command, as the defeat of the American corps, if it had been under a British general, would have given our enemies in the United States a good chance to blaspheme.*

In addition to his nationality, the armed service to which a unified commander belonged was also an important issue. Churchill (1968, p. 118), when discussing the appointment of General Wavell to ABDA command in 1942, notes that "It was staffed in strict proportion to the claims of the different Powers, and all in triplicate for the Army, Navy, and Air". Unified command of the Pacific foundered on the issue of whether it should be a Navy or an Army appointment. The US Navy felt that as it had acknowledged that command of the European theatre should be an Army appointment, then the Pacific should be a Navy appointment. This developed into an acrimonious debate with the result that command in the Pacific was eventually split between the US Army and the US Navy.

Those attempting to dissect "command and control" and provide meaning for the individual words offer many explanations for the supposed meaning of "control". The US Navy, for instance, states that "Control is the means by which a commander guides the conduct of operations" (NDP6, 1995,p. 9). Another version is provided by the US Marines who see control as "...feedback about the effects of the action taken"(MCPD6, 1996). These explanations do not allow for the possibility that the inclusion of "control" in "command and control" can be explained solely from its association with command arrangements.

The manner in which the terms "operational control" and "administrative control" were used by WWII politicians and military commanders indicates that they understood them to mean the limits to a unified joint or multi-national commander's authority over the forces of other Services or nations. WWII commanders had a similar understanding as their modern-day counterparts on the restrictions imposed by limited delegation of operational or administrative control or authority. For example, while the Australian Government delegated operational control of assigned Australian forces to General MacArthur in his capacity as Supreme Allied Commander, he acknowledged the restrictions inherent in not having administrative control of these same forces. In a letter to Prime Minister Curtin, General MacArthur referred to his not being able to move a RAAF headquarters into the operational area because "...the major proportion of the administrative personnel in the headquarters is composed of W.A.A.A.Fs (Women's Auxiliary Australian Air Force) who...are forbidden to leave Australia" (Odgers, 1957, p. 438). On the rare occasion when the

Supreme Commander's staff overstepped the limits of their administrative authority they were quickly made aware of the situation. In 1945 Allied Air Headquarters unilaterally designated Air Vice Marshal Bostock as Air Officer Commanding-in-Chief RAAF Command and were immediately advised by the RAAF Chief of Air Staff that such matters were his prerogative and that the order should be withdrawn (Odgers, 1957, p. 439).

While early usage included the modifiers "operational" and "administrative", these were soon dropped as evidenced from the immediate post-war usage of the term. A possible explanation for this is that command arrangements should spell out not only the commander's operational authority but also the level of administrative authority delegated. This realisation would have made the separate identification of the types of control unnecessary in any general reference to command arrangements.

A Compound Word

Alberts et al. (1995, p.6) states that "Prior eras referred only to command...no one knows why the language changed...". The historical evidence presented here suggests that the change may have commenced in the attempts to resolve the complex political and organisational issues surrounding command arrangements for the unified command of WWII joint and multi-national forces. Urban legend has it that "C2" gained its current popular acceptance after it was used as a means to gain funds from the US Congress for a military project.

"Command and control" may now refer to more than just command arrangements. The reference may instead be to command itself, or to command support systems, or any combination of these three (Sproles, 2001, pp. 15-22). When "command and control" is used in the sense of "command", the separate words "command" and "control" are synonymous and serve no real purpose in combination. Van Crevald (1985, p. 1), perhaps the pre-eminent authority in the field, chose to use "command" in preference to "command and control" when writing "Command in War". Ashworth (1987, p. 34) refers to "command and control" as "...a subset of command".

There is some evidence in the literature for this development of separate meanings being associated with the term "command and control". General Brooke, the British Chief of the Imperial General Staff from 1941 to 1946, referred to his having selected General Hobart to "control and command" the experimental 79th Division (Bryant, 1957, p. 597). This application of the term, curiously reversed in the same manner as that used by Curtin, is in the sense of "command". Frequent reference to expressions such as "control and direction", "operational direction and control", "direct and control", and "directing and controlling" will be found in Montgomery (1958). In most instances they refer to command arrangements but on other occasions they refer to "command". Another illustration is to be found in the way the term was intended in *Dr Strangelove* (1964). In this instance the reference is to what would now be called command support systems yet only a short time before this, "control systems" was being used to describe the same thing. Bryant (1957, p. 213), when referring to the German attacks on British air defence control centres and radars during the Battle of Britain noted the "...growing damage to its control system and airfields". When statements such as "Air power was used to destroy the enemy's command and control", it is command support systems that were being destroyed. Indeed, the most common use of "command and control" now seems to be associated with command support systems. This interest is expressed in the proliferation of terms such as C3I (Command, Control, Communications, and Intelligence), which Van Crevald (1985, p. 1) dismisses as "jargon", to indicate an interest in

a particular element of the command support system.

It is suggested that this is evidence of the gradual evolution of the term as it metamorphosed to become what is known as a compound word, i.e. two or more words that together express a single idea. An open compound word consists of two or more words written separately, such as "chief of staff", "rock and roll", and, dare we say, "command and control".

"Command and control" is not the only example of a military term that has metamorphosed over the years into an open compound word. Kemp (1954, p. 108) provides an historical background to the compound word "Fleet Air Arm" and its origins in the term "Fleet Air Arm of the Royal Air Force". In 1937 operational and administrative control of the Fleet Air Arm was passed over to the RN and it ceased to be an arm of the RAF. Since then the role and very nature of naval aviation has developed and bears little resemblance to what it was in the 1930s. To dissect this compound word into its component words and attempt to associate special significance to each in isolation does not add to the understanding of the single idea that "Fleet Air Arm" conjures up today. It is even more pointless to try to do so with the Fleet Air Arm of the RAN which has never had an organisational link with the RAF. "Fleet Air Arm" is a compound word with an interesting history that expresses an idea that is now different from that when it was formulated as a phrase. The origin of the word lies in the command arrangements established between the RN and the RAF but it has evolved over time to mean something else other than this. It shares this property with "command and control".

Which Explanation?

During the past several decades, many alternative explanations for the term "command and control" have been offered that concentrate on the relationship between the two component words of the expression. This article argues against this idea of treating "command and control" as a phrase. It suggests that "command and control" has evolved over time to become a compound word with three possible meanings, none of which can be ascertained without an understanding of the context in which the word is being used. Acceptance of "command and control" as a compound word then makes pointless any attempt to find meaning from any of its constituent words. The question to be asked is which of the available explanations is to be accepted? Is "command and control" a set of words whose individual meaning is pertinent to the meaning of the whole or should it be treated as a compound word expressing a single idea? Does it make sense to attempt to define the constituent words or should they be considered to be a single entity just as they are in other compound words such as "chief of staff" or "rock and roll".

The argument presented in this article is that the meaning of "command and control" has evolved over time and that this meaning is no longer to be found in an examination of the discrete words making up the term. Unfortunately there does not appear to be proof positive one way or the other as to which of the various explanations on offer is the correct explanation. One person's view, it would seem, is as good as anyone else's. However, the explanation of the meaning of the term "command and control" offered here has the virtue of simplicity and, according to Occam's razor, it should therefore qualify as the most likely explanation under the circumstances.

Occam's Razor

Occam's razor is a principle stated by a medieval monk, William of Occam, that "Plurality should not be posited without necessity". Although its application can be subtler than just as a mere application of the

KISS principle, it is generally understood to mean that given two explanations, then the simpler is more likely to be correct. When applied to the term "command and control", which of the explanations offered is the simpler? Is it amongst those that attempt to find a variety of seemingly obtuse meanings that are often difficult to comprehend and seem to serve little purpose? Or is it the one that places the origin of the term in the historical context from which it has developed and acknowledges its evolution over time into a new set of meanings? The choice is ultimately the reader's.

Conclusion

It is suggested that the origin of the term "command and control" lies in its association with the command arrangements developed in WWII to achieve unified command amongst the Allies. Over the intervening half century or so, the term has come to be used to refer not only to command arrangements but also to command itself and to command support systems. The term has also metamorphosed over that period from being a phrase to being a compound word. Any relationship between the separate words "command" and "control" is an historical curiosity that should be accepted as such. Attempts to attribute special significance to these words serve little purpose and add nothing to the understanding of what the word is trying to convey.

It is worth repeating once more at this juncture that the explanation offered in this article for the meaning of "command and control" cannot claim to be definitive, at least not at this stage of the enquiry. However, unlike other attempts to explain the term, this article provides a plausible history and derivation of the term that fits in with documented history and the mindset of the people who initiated the term. Attempts to associate other meanings complicate the issue and only serve to add to the confusion surrounding the term. Occam's razor indicates that the explanation provided in this article, by giving the simplest explanation of the term, is more likely to be correct.

Therefore, to paraphrase words used by President Kennedy in his inaugural address in January 1961, it may be best to "Ask not what 'Command' and 'Control' means to you but what you mean by 'Command and control'".

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Australian Leadership – Leading Edge or Luddite?

By Captain Christopher Ruff, Aus Int

As Great Britain underwent the Industrial Revolution during the late 18th and early 19th centuries, many of the old manufacturing systems gave way to new innovative processes based on mass production and mechanisation. As the physical processes themselves underwent this change, the attitudes and values of the people themselves were changing just as rapidly. Resistance to this change was common, and a group known as the Luddites established a reputation for action in this area. The Luddites were predominantly handloom weavers who, fearing the loss of their lifestyles to the new factory based machinery, resorted to acts of vandalism in order to resist the introduction of the new processes. Because the Luddites were financially secure under the old system, with its removal, they saw their way of life (and their influence) being destroyed. The authorities ultimately responded to their actions, but their movement has gone down in history as being representative of those who do not readily embrace changes in their respective environments.

Just as the processes, skills and systems of the agricultural era were removed to meet the demands of the industrial era; new ways are today being sought to take advantage of the opportunities offered by the information age. This new age has brought with it a host of changes particularly in the way people are led. Traditional career structures no longer exist and managers are required to take more responsibility for their own development. They are expected to coach and empower rather than to control, and temporary roles and competencies are replacing job descriptions. Flexible contracts are becoming the norm and traditional systems of hierarchy are giving way to flatter structures based on processes and teams.[1] If leaders are to keep pace with workplace changes of individual accountability, global competitiveness and continuous learning, they need to adopt new leadership approaches and philosophies such as those described above. This new approach is necessary for the trend to globalisation is probably the most important issue affecting Australian leaders in the 21st century.

Just as it was 200 years ago, there are many people today who do not feel comfortable with these changes and the pace at which they are occurring. These people are very likely to resist this change and attempt to retain the old processes within which they felt comfortable (and powerful). It is these people who I choose to refer to as the new Luddites, and just like their predecessors they have the potential to cause considerable damage and inconvenience when they choose to actively resist change within their respective organisations.

Australia is not immune to this phenomenon and it is because of this vulnerability that this article will seek to examine whether Australians are at the leading edge of leadership or whether they are Luddites. The main focus of this article is to highlight that whilst Australians take pride in the way they conduct leadership in their respective environments; many people appear to refuse to adapt their particular leadership approaches to reflect the changing demands of their organisation, despite the advantages in doing so. In order to highlight this point, the first part of this article will be devoted to summarising the theoretical perspectives of what constitutes Australian leadership.

Secondly a description of the environment that Australia operates within will provide a useful context with which to approach the final stage of this article. Finally, the issue will be highlighted that whilst Australians attempt to embrace new approaches to leadership, they are often prevented from doing so primarily by a resistance to change. Many leaders seek to retain their positions and influence under the old approaches and just like their Luddite companions from 200 years before, they attempt to damage the process and delay the adoption of new techniques.

In a presentation to the Senior Executive Service in Canberra on 16 April 1998, Dr Ken Parry from the University of Southern Queensland presented the findings of a recently completed synthesis of leadership research in Australia and New Zealand. This research examined the practice and nature of leadership in various organisational settings. The researchers interviewed over 5000 Australians from both private and public sector organisations with the results being compared with similar research conducted in the United States. Because of its depth, this study provides the background to the examination of the theoretical aspects of Australian Leadership in this article.

Transformational leadership is a popular and current concept in leadership and this is evidenced by its concentration in the research that is undertaken in Australia. Some authorities in this field include Bruce Avolio, James Sarros, Oleh Butchatsky and Joe Santora. Avolio for example presents his interpretation of the ways that transformational leadership can deal with the challenges experienced in Australia. His work discusses the component aspects of transformational leadership and outlines its benefits from the individual, team and Total Quality Management (TQM) perspectives. The main themes that arise are the criticality of changes to the existing mindset of management; the criticality of organisational learning; the importance of changing and improving the existing management workforce rather than waiting for a newly educated workforce to arrive. He also stressed the importance for leadership of building teams and building cultures.[2]

The works of James Sarros, Oleh Butchatsky and Joe Santora recommend a key shift in the approach to leadership, an approach that can be found in the work titled "Australian Leadership".[3] This recommendation is based on an analysis of interviews with senior Australian executives, which resulted in the generation of a model of "breakthrough leadership". Breakthrough leaders rethink the structures, processes, values and ideals of the realities of organisational life with the purpose of improving existing practices, or replacing them with something better or more relevant. It results in the four Cs – continuous learning, confidence, competence and commitment.

Another perspective on Australian leadership is that put forward by Parry and Sarros where, with the increasing globalisation of both the business and government environment, flexibility and adaptability of leadership styles to suit different markets and clients is becoming essential.

All of the researchers described in this article agreed that certain aspects of leadership need to be adopted regardless of career path and gender. These include:

- creating a vision and having strategic skills;
- communication and people management skills; and
- knowledge of the industry and/or expertise in the subject matter.

Other aspects include drive; innovative thinking; political awareness; engendering trust and negotiation skills. The opinions expressed in this study were consistent with the known values, abilities, and skills of leadership. The traditional leadership aspects of communication, strategic thinking, valuing people, personal qualities and values-based

behaviour were reaffirmed as important for both present and future leaders.

This research is just as relevant for followers in organisations as it is with the leaders and this is an important point when examining the impact of leadership in Australia. Transformational leadership is able to change the motivations, beliefs, and attitudes of followers more so than other approaches to leadership. The ability to affect this change has a significant impact on their behaviour and values as their perceptions of satisfaction; effectiveness and output are influenced by the actions of their leaders. As their behaviours and values are influenced, so too is the culture of the organisation and ultimately this can develop into improved organisational performance. Whilst this influence is hoped to be seen in a positive light, any negative perceptions in this process can have an equally significant impact in these areas. This will be covered later in this article when the behaviours of current leaders are examined.

In his presentation, Parry states that Australian leaders are currently grappling with the implementation of technology, globalisation and change management throughout their organisations. Innovation, creative thinking and cultivating knowledge capture and dissemination are considered to be essential for leaders in order to handle these developments. Also important is the ability to achieve cultural transformation and corporate agility through influencing people and values. From this statement it appears that the adoption of transformational styles of leadership is necessary when it mirrors the skills required to handle the changes in technology and globalisation.[4] Many leaders mention transformational leadership, but as the next part of this article will demonstrate, there appears to be some resistance to this change and the leading edge Australian is replaced by the Australian Luddite.

From the materials obtained in the research for this article, it is evident that Australia recognises the concepts of transformational leadership and it attempts to encourage their use within the workplace. This should be successful given the nature of Australia's culture and national psyche. Australians like to see themselves as an easy-going and athletic nation, and the habit of combining business with sport indicates this. The deeply ingrained cultural traits in Australian society as well as institutional factors such as the legislative framework underpinning workplace behaviour adds value to the adoption of this approach to leadership. In keeping with an increased global perspective, a more competitive business climate has produced a more inclusive leadership style according to Paul Kerin, Managing Director of the management consultancy AT Kearney.[5] Authority is being devolved, shared with the emphasis on cooperation. Teamwork, partnerships and the entrusting of employees further down the line with greater responsibility are the key issues for the people running Australian companies.

Yet whilst these traits share a commonality, certain negative aspects of Australian culture exist that can prohibit the development of effective leadership. Australians are inclined to be sceptical of leadership. Whereas American leaders receive the respect of their followers until they demonstrate themselves to be untrustworthy, Australian followers start with a negative aspect of their leaders until they deserve their respect.[6] Quite simply, in Australia, leadership is a tenuous occupation, because once one is in the role, there is often someone waiting in the wings to take over. Research for the Australian Industry Taskforce on Leadership and management skills found that Australian managers tended to possess a cultural mindset that fails to recognise the need for changes in management styles.[7] Perhaps the most troubling sign is the failure among leaders to identify the uniqueness of Australia. This is in part a measure of isolation:

There is no strong sense of identity because identity relies on being noticed, and at times the rest of the world rarely notices Australia. Whilst it is important to gain the benefits from seeing the world and absorbing different cultures, one should come back to the local culture and embrace it. To impress others, it is first necessary to understand yourself and this is perhaps highlighted by this extract from Sarros's book *Australian Leadership*, a quote that highlights the unique position that Australia is in the world.

> *Historically, Australia is the progeny of the United Kingdom. Ideologically, we are closely aligned with the United States. Geographically, Australia is firmly in the Asia Pacific region. Is it any wonder Australian Executives have some trouble leading their firms when confronted with contradictory conditions such as these?*[8]

The examination of Australian leadership soon makes it clear that it is culture specific; for what leadership means in Australia may be different to the concept in the United States, Middle East or Asia. Americans generally are committed to leadership yet whilst the British share the same language, their concept of leadership is more restrained. The key differences appear to be in the areas of people orientation, skills in negotiation, skills in managing national diversity, and the capacity to manage between extremes. Evaluating the quality of Australia's leaders requires taking a longer perspective of national progress and assessing performance not just against what is achieved but also against what might have been done. The implication is that leaders are a long way from knowing how to place Australia in the emerging global economy.[9]

Many operating managers however consider culture change or organisational improvement the "forbidden zone". They recognise the opportunity in doing this for the organisation, but are uncomfortable or overwhelmed addressing it. Many companies are prepared to make dramatic changes to organisational structure, however painful that may be but they often fail to change the soft elements of the organisation. Cross-functional teamwork, delegation of responsibility, and broadly defined roles for employees are key drivers of the potential benefits in most redesign initiatives – yet they are frequently neglected. These issues become that much more important as the scope and level of change desired increases.[10]

As indicated, there exists within Australian leadership (especially at the higher levels) a distinct reluctance to practice effective leadership styles. When it comes to leadership, Australians appear to display a cultural quirk that can make the adoption and acceptance of new styles of leadership difficult. Added to this is insecurity when it comes to asserting themselves in the wider international arena. It is well known that Australian cricketers and rugby players are the best in the world and that our Olympic Games were one of the best. However, when it comes to competing in the global marketplace, problems can occur. The institution of the changes necessary to be more competitive are recognised by senior leaders within organisations, but it appears that they are unwilling to make the hard but necessary changes. Those leaders who encourage (whether intentionally or not) the resistance to the adoption of change are causing significant problems for the future. If the leader acts in this way within an organisation, then those followers who wish to do so may attach their values and beliefs to this leader. This may result in the spreading of this resistance further down the leadership chain.

The first part of this article mentioned the Luddite movement and the motives for their actions. If a suitable example could be found today within Australian leadership then this could be it. "Australian Luddites" by the virtue of their positions of influence within the leader/follower relationship are capable of inflicting greater damage to an organisation than simply smashing a handloom. This does

not mean that there exists a nationwide conspiracy to thwart the development of effective leadership. Many of these people simply fear the consequences of the rapid developments that are being seen today and they feel that they may not be able to handle them. Because of this, their actions are a means of coping with their situation. It is almost as if they are slowing down the pace of change to a level to which they are comfortable with. This form of resistance whilst not endemic is sufficiently well entrenched to constitute a problem that needs to be recognised and dealt with.

As younger generations adopt transformational approaches to leadership, these issues should be reduced over time. Those people who represent Generation "X" and "Y" have greater exposure to rapid change and the onset of globalisation. As a result, they are better equipped to embrace change. As these people progress throughout their organisations, they are more likely to utilise transformational styles of leadership and enable the changes to develop within the organisation that will hopefully improve organisational performance. Tough markets for products and services drive ongoing major workplace change at a relentless pace. For these reasons, the leadership skills required to create a stable yet innovative future to inspire and motivate people to commit to the new, are required more than ever at all levels of the organisation. This is a belated recognition that we need a different balance of skills for the situation at the moment, and that these skills are everybody's business.

Can anything be done for the "Australian Luddite"? In the 19th century, Luddites were imprisoned and sometimes executed for their actions. Whilst many would like to wish the same fate on various leaders they have met during their lives, measures such as these are not necessary in today's environment. The key lies in developing critical cultural capabilities that will make companies competitively fit for today's economy. Traditional rules of management and organisational design need to be broken and new paths to success need to be defined. By focusing on alignment, a better understanding of the differences in thinking and behaviours required of leaders can be obtained. Creating alignment involves three broad categories of activities: generating context, co-creating challenging and compelling commitments and realising them. Leaders must embody the organisation's commitments. Leaders do this through changing their behaviours and actions so that they become the personification of the commitments.[11] Avolio's view on transformational leadership mentioned that it examines the criticality of changing cultural mindsets as well as emphasising learning throughout organisations. This perhaps is the most useful way to handle the new Luddite. Essentially their existence is based on fear and a lack of understanding as to what is occurring. If these fears are removed, then the process can be allowed to resume and these leaders can play their role in the change.

It has been a continual process since then of developing programs in leadership and management development that look at values, ethical issues and leadership as an all-encompassing aspect of a person's life. In the global context, Australian managers are not going to be successful if they do not learn relationship skills of a very high order. It is insufficient to take Australian leaders and tell them that they have to be better at relating to people in different cultures and understanding workforce and strategic alliance partners in different cultures. Many Australian executives do not understand themselves well enough to be effective leaders. Australia is coming of age in terms of business leadership and to share in the rewards, Australia needs leaders who have vision and the capacity to achieve that vision with the commitment and conviction of a challenged, educated and energetic

workforce. Therefore, Australian leaders require international experience, language capabilities, experience of managing cross-culturally, and an understanding of cultural nuances pertaining to social, economic and political relationships overseas.[12] This change will not be easy for it goes to the very core of the organisation, challenging the culture, values and beliefs that brought success in the previous decades.[13]

In some circles of Australian leadership, there exists a fear, not necessarily of change itself, but at the pace of change and its perceived direction. Just as the handloom workers feared the loss of their positions, so too do some of our leaders and it is due to this negativity that a Luddite attitude may be perceived as being prevalent in Australian leadership. This should not be a long-term issue, for as the industrial evolution progressed and provided the impetus for change in other areas, so to will the changes present in 21st century life allow for significant improvements in the field of technology and globalisation. The Luddite phenomenon appears when old processes undergo dramatic and significant changes. The use of education and the continued use of new approaches and the resolving of deeper cultural issues within both the leaders and the followers can handle situations such as these. The applications of transformational leadership styles are one way of helping resolve these issues. Australia is able to contribute to the wider global community, but first the cultural issues covered in this article need to be addressed. Once Australians are able to understand themselves in a wider global context then they can attempt to resolve the negative issues affecting their performance. Whilst a Luddite attitude can be seen at the moment, Australian leadership can look forward to be being seen as leading edge in the near future.

NOTES

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Does Risk Management Cultivate a Culture of Risk Avoidance?

By Captain I. D. Langford, RAInf

An Army not prepared for combat is like an orchestra without instruments.

The Fundamentals of Land Warfare[1]

The safe management of the Australian Defence Force (ADF) materials and personnel has received significant attention over the past few years both operationally and non-operationally. Deployments such as East Timor, Bougainville, and Afghanistan, events such as the Blackhawk accident, the HMAS Supply fire, and the ADF Everest team tragedy in 2001 have brought the management of risk into the spotlight.

The ADF, including the Australian Army, has introduced mechanisms of Risk Management (RM) identification and mitigation into the decision-making process. This is aimed at maximising force preservation whilst encouraging intuitive decision-making. This mechanism has been incorporated into military doctrine and is applied entirely across the operational continuum (peace, conflict, and war).

The Army has both a legal and moral requirement to minimise risks whilst maintaining capabilities largely concerned with the exercise and application of violence. This training is inherently dangerous, and it is this balance between realistic training and risk minimisation that has led to a culture of risk avoidance being encouraged to ensure no loss of life or equipment.

The aim of this article is to assess whether RM doctrine and procedures encourage risk mitigation or total risk avoidance. Much of this analysis is derived from terms and definitions within the doctrinal risk management process, so therefore a review of the key terms and elements of risk management must be included.

Risk Management and Avoidance

Risk is defined as:

the potential for injury or loss, the potential for a hazardous event or hostile action to occur. It is a combination of consequence, exposure, probability/likelihood of a specified hazardous event or hostile action.[2]

It is this potential which RM attempts to mitigate against through examination of the activity and the level of risk determined to be acceptable.

Risk Management is defined as:

a process whereby decisions are made and actions implemented to eliminate or reduce the effect of hazards and threats to the achievement of a mission or task.[3]

The RM process is broken down into seven stages. They are:

a. Step One: Establish context;
b. Step Two: Identify risks;
c. Step Three: Analyse risks (the likelihood and consequence of each event should be determined);
d. Step Four: Evaluate risks;
e. Step Five: Treat risks (identify treatment options);
f. Step Six: Monitor and review; and
g. Step Seven: Communication and consultation.

Once this process is complete, the commander must then be willing to accept the identified risks. This may minimise or exclude

some components of the capability development which, whilst expedient for the commander in the short term, impacts on realism in training and creates a culture of risk avoidance over the long term.

Limitations of Risk Management

There are a few limitations within the standard RM framework that could restrict its effectiveness as a command tool. Firstly, RM assumes that the activity being analysed must be conducted in the general manner specified. Treatment options (i.e. Step 5 of the process), do not incorporate alternate means of conducting the activity (e.g. fly/steam/drive), and it would not be valid to embed alternatives within the existing framework. This would therefore mean an individual, stand-alone RM analysis for each activity option is required, despite it being a component of the same operation/exercise.

A further limitation of the nature of RM concerns the management of time. RM implicitly assumes that all selected treatment options must be implemented immediately in order to be effective, but in some circumstances this assumption is not correct. This will arise in the context of deliberate planning, and any other risks seen on the horizon are deferred until that stage.

The other significant limitation to the RM process assumes that all risks are independent of each other. As a result, the structure of the RM is very straightforward, with a list of risks and mitigators the result. However, there is in fact a very complex inter-relationship between risk and circumstance, which should be considered when examining treatment options (e.g. a vehicle accident could be the cause of a gunshot injury; this could be mitigated against if the requirement to unload prior to boarding a vehicle was identified).

RM also fails to take into its calculations any historical or statistical analysis when determining the probability of occurrence. If in fact we did proper statistical analysis of those accidents that did occur then we may find that many are in fact within "residual risk" probability zones.[4] (For example, if we knew that the probability of death by accidental discharge of a weapon is 1:1,000,000 we would not bother trying to manage it since it was well within acceptable and community standards).

Risk Avoidance and Risk Acceptance

Risk avoidance is defined as the informed decision not to become involved in a risk situation.[5] In relation to RM in the Australian Army, it is argued that as a result of the focus of risk management in doctrine, commanders are unwilling to accept the higher risks identified at a cost of the realism of training. The commander that chooses to not accept reasonable risk therefore becomes an inhibitor to the maintenance of individual and collective capability of his/her force element. This is, of course, in direct doctrinal contrast to the Australian Army's vision, which is:

> *...to become a world class Army, ready to fight and win as part of the Australian Defence Force team, to serve the nation and make Australians proud.*[6]

Risk acceptance is the calculated decision taken by commanders accepting risks once they have assessed that the outcome is worth the risk "exposure". It is a command decision based on balancing the mission, the personnel, and the outcome. On operations the results are fairly obvious, with success gauged by the accomplishment of the mission, casualties taken, etc. In training, success is determined predominantly by the safe conduct of the activity, and the improvement of capability. It is in training, however, that the commander can limit the improvement of capability through refusal to accept reasonable risk.

The acceptance of reasonable risk is an essential quality of commanders, who as a consequence of their actions determine both operational success and realism in training. Realism in training develops in individuals and teams the knowledge, skills, and attitudes

required to win the operation. Quality training ensures that commanders and their soldiers are fit to carry out their tasks and responsibilities. Such involvement is central to the development of a mutual trust, and it is the commander that must engender this in training to ensure it continues in battle.

The Australian Army and Risk Management

As stated, RM in the Australian Army is a method undertaken to achieve force preservation and preserve combat power.[7] The authoritative documents for the implementation of the Army's risk management policy are Training Information Bulletin No. 83 (TIB 83), *Risk Management*[8] and the *Defence Occupational Health and Safety Manual* (DOHSMAN).[9]

It is the TIB 83 which links RM to doctrine, clearly articulating the responsibility for commanders and all key stakeholders to incorporate RM into their exercise and operational planning (via the Military Appreciation Process). The DOHSMAN details the actual implementation of RM in the workplace, the formulation of policy, and the ownership of responsibility onto all commanders and their soldiers. Of particular note however, the DOHSMAN considers impartially the acceptance or avoidance of risk as competing options, although it points out that avoidance of risk is the only option requiring no additional effort from the commander.[10] This in a sense makes it a more seemingly attractive option to a risk-averse commander. Despite this however, both of the aforementioned documents offer sound policy and advice to commanders to enable them to achieve an effective balance between capability development and operational/exercise safety.

Risk Management and Doctrine

RM is firmly embedded into the Australian Army's parent philosophical doctrinal publication, *The Fundamentals of Land Warfare*.[11] Force preservation is the principle-driving element for the rationale for RM. It is achieved through the acquiring of a *knowledge edge* a process beginning with information and ending with decisive action.[12] The application of the knowledge edge in training and combat allows commanders to pursue *professional mastery*, which provides the means to realise the potential benefits of superior situational awareness.[13]

Doctrinally, the Australian Army encourages manoeuvre warfare utilising directive control.[14] This ability to manoeuvre relies on effective command. One of the principle components of command concerns itself with decision making. RM of course aids the commander to fulfil doctrinal obligations, but also gives the commander the freedom of action to focus on the key issues, rather than being distracted or overwhelmed by the unimportant.[15]

Risk Management and the Military Appreciation Process (MAP)

TIB 83 articulates exactly the relationship between RM and the MAP:

> *The risk management process is not a remedy for poor planning or execution.*
>
> *It is not a separate planning process to the MAP. Indeed, the MAP is primarily concerned with the identification of risks associated with each possible COA, determination of methods to control risk, and acceptance of risk inherent in the final plan.*[16]

It is the thought processes that are involved in the formulation of RM that is applied informally within the Intelligence Preparation of the Battlefield (IPB). This step gives scope to the commander to consider the risks from the threat (i.e. enemy), and the environment (terrain, weather, etc). Accordingly, during the Course of Action Analysis, the commander wargames plans, auditing them informally for risk and risk controls. This is the operational implementation of RM.

As stated, through the doctrinal application of RM throughout the process of the MAP, professional mastery at all levels of command is enhanced. This engenders an intuitive decision-making cycle at all levels. This lessens the effect of the "fog of war" which is derived from misinformation, contradictory evidence, and intelligence sensor confusion.

Application of Risk Management on Operations and Training

RM on operations is somewhat easier to accommodate than in training. For the commander, operational risk is an ongoing consideration in all aspects of military appreciation whilst deployed. Owing to this fact, it is easier for the commander to accept an operational risk because it is put into a context in relation to the strategic aim (e.g. Military Operations in the Littoral Environment, Forced Entry from the Air and Sea, etc). Casualties on operations are also seemingly more acceptable to Government in the pursuit of its strategic agenda rather than in training.

In training, RM is a much more involved process, which places risk into a training context, the benefits of which are much harder to identify. This has the potential for the commander to make the assessment the risk is not worth the reward. The price of this, is of course, a loss of realism in training and a reduction in individual and collective capability. This "risk-averse" culture is perpetuated not necessarily by the RM process, but from a refusal from commanders to accept that despite our best efforts, managed risks will sometimes occur. These commanders disregard doctrinal guidance (to provide realistic training) in order to eliminate risk.

TIB 83 begins with the premise that both operations and training are hazardous and will be rarely free from risk. It is the doctrinal responsibility of commanders to utilise RM tools both formally and informally in order to facilitate realistic training. Paradoxically, it is the realism of training and the acceptance of risk by the commander in training that will reduce the risk to personnel and equipment on operations. Risk avoidance is the act of commanders who by virtue of their risk refusal in training, increases risk on operations.

Conclusion

This article has demonstrated the importance of RM across the operational continuum in the Australian Army. Whilst some believe that the articulation of the RM process encourages a process of "risk avoidance", this article contends that this avoidance is more to do with the refusal of some commanders to accept risk rather than the requirement to conduct the RM process as per the TIB 83, DOHSMAN, and *The Fundamentals of Land Warfare*.

As discussed, it is the preservation of force that is the fundamental aim of RM in both peace and war. Commanders at all levels have an obligation to provide realistic training and accept risk in order to minimise that risk when on operations. It is in the pursuit of the "knowledge edge" that will lessen the likelihood of an accident in training, or a tactical disaster in war.

NOTES

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3. ibid., p. xv.
4. Email MAJ Mike Cook/Brig Peter Lambert (AAA President) dated 2 Apr 02.
5. Australian Army, *The Fundamentals of Land Warfare*, 2002, p 3.
6. ibid., p 3.
7. John F. Antal, *Manoeuvre Warfare: An Anthology*, 1993, p. 1-1.
8. Australian Army, *Training Information Bulletin No.83 Risk Management*, 1998.
9. Australian *Defence Force, Defence Occupational Health and Safety Manual*, 2001, Chapter 5.
10. Australian *Defence Force, Defence Occupational Health and Safety Manual*, op. cit., para. 506.
11. Australian Army, *The Fundamentals of Land Warfare, 2002*, p. 87.

12. ibid., Ch 4.
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Current and Future Command Challenges for New Zealand Defence Force Personnel

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The Berlin Wall's destruction in 1989 initiated a two year period in which the Soviet Union struggled to hold together and prove it still had political and economic relevance in a world that no longer cared so much about the communism-capitalism rivalry that had dominated international relations for 40 years. In 1991 the Soviet Union could limp on no longer and, in essence, gave up the fight. The Union collapsed, eventually replaced by a weaker and smaller Commonwealth of Independent States.

Although the likelihood of global war has since become remote, the Soviet Union's dissolution brought an end to the power balance that had created a degree of certainty in international relations. Whereas the great powers had generally kept a lid on their subject or satellite nations' internal tensions and squabbles – often through the threat or use of force – their new "hands off" policies and practices have allowed those tensions to re-emerge.

The first example of this occurred even while the Soviet Union was gasping its last breaths in 1991. In June of that year Croatia and Slovenia decided they would not remain part of the Federal Republic of Yugoslavia. This initiated a bloody four-year intra-state conflict (that is, a war within a state, not between states) that pitted various south Slavic ethnic groups against each other.

Without the superpower interference that kept ethnic disturbances and state failures at a "manageable" level, such crises have escalated in number and intensity. The dawn of the 21st century reveals a world that is highly fractured, with the United Nations (UN) supporting an ever increasing number of peacekeeping missions in countries where cultural, religious and ethnic tensions have turned violent.

The UN has not, however, proven entirely successful at easing tensions and fostering peace in many hot spots around the globe, and its record of successful peacekeeping is poor. The UN's apparent support of the right to self-determination for all peoples (most easily defined by ethnicity and cultural uniqueness) may be an attractive by-product of de-colonisation. Yet this ideal has itself inspired ethnic groups to seek self-determination or sovereignty in states and regions where the attainment of their goals without violent struggle is highly unlikely.

Only the United States, as sole superpower, has the ability to take the lead in major security problems. Yet its foreign activities are themselves sources of tension to many peoples who accuse the US of heavy-handed behaviour, favouritism towards certain states, self-serving foreign policy and cultural imperialism. Even the widespread sympathy the US gained in the wake of the 11 September 2001 terrorist attacks is evaporating with surprising speed. Any mismanagement of the Americans' "War on Terrorism" could be greatly destabilising, particularly in the already volatile Middle Eastern and Central Asian regions.

The fragility of world peace naturally impacts on New Zealand and its security and foreign policy concerns, especially as its own "neck of the woods" – the Asia Pacific region – has not remained free of coups, ethnic disturbances and failed states. Aspirations of self-determination or freedom from external controls have emerged in several places around the Pacific Rim. UN and regional coalition

New Zealand troops in East Timor

peace-support missions are consequently no longer occurring only on the other side of the globe; they are happening in New Zealand's backyard. Since September 1999, for instance, New Zealand has maintained a large peacekeeping force of 700 or so Service men and women in East Timor.

The point of all these observations, of course, is that there is something paradoxical and disturbing about the way successive New Zealand governments have handled defence and strategic issues since the end of the Cold War over a decade ago. Between 1991 and 2002 the percentage of New Zealand's GDP devoted to defence almost halved, with the National Government being responsible for most of the reduction in defence spending.

The Labour-led Coalition Government formed in 1999 has not reversed the trend. Despite having more New Zealand Defence Force (NZDF) personnel deployed overseas (most in East Timor) at any time since the Vietnam War, the Government seems willing to keep defence spending at a mere one *per cent* of GDP. Nonetheless, seeing no obvious threats to New Zealand's sovereignty, and with a global war now highly unlikely, the Government has sought a new role for its armed forces. Judging peace-support missions to be the NZDF's best means of contributing to regional security, the Government has tried to make the NZDF a more flexible, effective and deployable asset for the United Nations and any potential regional coalitions.

It has, therefore, significantly re-prioritised its meagre defence spending in order to achieve different objectives to those set by previous governments which were purportedly locked into Cold War thinking. Its decision that New Zealand no longer needs an air strike capability, announced in May 2001 and actualised through the dissolution of three RNZAF squadrons by year's end, represents New Zealand's greatest departure from traditional defence and foreign policy thinking in several generations.

Some people in the NZDF and the wider community consider the Government's actions, policies and plans to be reckless and unwise, while other see them as courageous, timely and appropriate. Debate between these two "camps" raged throughout 2001 and into 2002, with bitter public accusations of conspiracies and leaks of official information overshadowing and stifling genuine debate on the most important strategic and security issues.

It is within these challenging global and national contexts that the NZDF's officers must strive for command, leadership and managerial excellence as they undertake the nation's wide-ranging demands as defined and articulated by the Government.

Perhaps right now the greatest challenge for any potential or serving commanders, especially at higher levels (Army lieutenant colonel or equivalent), is keeping their own and their subordinates' morale high. Morale throughout the NZDF has clearly taken a battering from savage media criticism and microscopic scrutiny, fuelled by self-serving politicians who are using defence issues as "ammunition" to fire at their enemies on the other side of the Debating Chamber. Seemingly endless claims of dysfunctionality, inter-Service hostility and conspiracies have increased, not decreased, the tensions and inter-Service suspicions.

Junior, intermediate and senior leaders in all three Services have a heavy command responsibility (which almost all recognise, of course) to prevent their own and their subordinates' feelings about recent and current defence policies from becoming divisive. They must pull their units and Services together, not apart.

This won't be easy for all personnel. The Government's disbanding of the air combat and jet training squadrons in 2001 seriously wounded morale within the RNZAF. For remaining airmen and airwomen their primary challenge may well be overcoming their resentment and staying in an Air Force that will no longer have much possibility of a direct combat function. Many RNZAF officers, including senior officers, feel that their *raison d'être* no longer exists, and that air logistical support of the Army and Navy cannot possibly give them command opportunities of a genuine military type. Yet, at least for the next few years, the RNZAF's senior officers will have powerful command challenges to rise to: keeping personnel aware of their constitutional loyalty to a government they may still feel hostile to; maintaining order and discipline in spite of dissatisfaction; providing strong and inspiring leadership to raise morale; demonstrating managerial efficiency and effectiveness as they re-organise the Air Force for its new roles and challenges.

The Navy, on the other hand, will benefit from the Labour-led Government's decision (announced in January 2002) to purchase a large multi-purpose warship and several off-shore patrol ships to go with its two ANZAC-class frigates. With more hulls in the water, and with the officer in charge of each ship exercising command, leadership and management responsibilities (even on a limited scale in the case of small vessels) the Navy looks set to provide more command opportunities than it has been able to for several decades.

Tensions between the three armed Services are not new, of course. At least a little inter-Service rivalry has always existed, particularly over capital acquisitions and upgrade/-modernisation programs. The run-down in defence spending during the last decade or so has even occasionally turned the Services against each other in an unwanted, but seemingly inescapable, competition for resources.

Yet the Services have, by and large, committed themselves to the concept of jointness; that is, their closely synchronised employment, under unified command, to achieve common objectives in a range of

situations across the broad spectrum of conflict. Although the Labour-led Coalition Government's scrapping of the RNZAF's air strike capability has undoubtedly damaged inter-Service relations, in the short term anyway, the future is not bleak. In July 2001 that same Government established New Zealand's first operational Joint Forces Headquarters, with personnel drawn from all three Services to form a staff that will plan and oversee future NZDF operational deployments. This is a significant step towards the attainment and maintenance of true jointness.

Yet jointness itself creates tremendous challenges for those exercising command. Joint commanders need to know far more than single-Service commanders ever did. They need at least a basic understanding of the terminologies, technologies, doctrines, limitations and capabilities of all three Services, as well as how best to utilise elements from each at any given moment. Because this places unrealistic expectations on any one individual, the Joint Force Commander (a major general or equivalent) has to rely heavily on his or her three Service component commanders. They, in turn, have to work harmoniously as a united team of experts as they offer advice, make plans and coordinate efforts. Appropriate training for these joint command positions will be difficult; the US leads the world in this area, but New Zealand and the US now have very limited officer exchange programs.

At the very heart of jointness is the notion that, although a particular Service may sometimes seem to be the dominant force because of its largest contribution to a particular mission, all three Services are equal partners and all have critically important roles to play. Effective jointness is certainly a force multiplier, and should be pursued with zeal.

Commanders not only within the Joint Forces Headquarters, but also those within the single Services, must ensure that their staffs and teams respond to the other Services as brethren-in-arms. They must tolerate no inter-Service rivalry and they must try to gain fuller understandings of the limitations and capabilities of the other Services.

This naturally raises the issue of technology. Since around the time of the Persian Gulf War of 1991, new weapons, information technologies and tactics have purportedly been transforming warfare to enable battles to be fought "over the horizon" with little face-to-face contact between belligerents. Military professionals commonly describe this transformation as the "RMA", or Revolution in Military Affairs. The more ardent and techno-centric proponents of this RMA claim that the fundamental nature of warfare is changing. Digitisation and remotely operated weapons, they say, have already made redundant the chaotic, frightening and violent close combat that has always characterised warfare. The "norm" will now be less chaotic and more manageable "stand-off" battles (hitting the enemy from positions of safety) and long-range precision strike.

Other more cautious commentators, including the author of this article, accept that the means of prosecuting warfare have changed dramatically, so that a joint or combined-arms battle today would be incomprehensible to, say, one of General Patton's soldiers. Yet we also believe that warfare's fundamental nature has not changed at all. Rather than being in a military revolution, it seems clear that we are merely in a period of rapid change in the technologies available with which to do the same old jobs: intimidating, coercing, punishing, taking, crushing; in short, threatening or inflicting bloodshed.

Having said that, New Zealand commanders *must* stay abreast of those new and constantly-improving technologies if they want to remain professionally competent and military competitive. Thanks to satellites and aircraft and shipboard tracking and sensor equipment, for instance, they can have

fantastic battlespace awareness. But they will have it only if they strive to master the technologies and the corresponding new practices and procedures (and sometimes even new doctrines) and recognise the full potential of the new capabilities they provide. They must also take great care when assessing or exploiting all new capabilities that they don't become, or let their subordinates become, so smitten by the technology that they take their eyes off the time-honoured and proven principles of war.

Education is thus becoming more important, not only in terms of the great mass of technical information now available, but also in terms of understanding the complexities of the constantly changing world, region and nation. With peace-support missions becoming more frequent and substantial, NZDF personnel are called on increasingly to operate in wider and less familiar roles throughout the west and south Pacific regions. These roles include peacekeeping, truce monitoring, conflict resolution, disaster relief and civil defence.

With these new demands in mind, the New Zealand Army has gained a slight lead in terms of providing tertiary education to its officers and senior NCOs, but the other Services are not far behind. All are now providing at least a basic education in: military history; the wider international environment; the origins and character of this region's diverse cultures; the distinctive foundations and nature of New Zealand society; the organisation and governance of its communities; and the nature of civil society, democracy and public discourse.

All this, of course, must be learned *in addition* to the routine, the promotion-related and the specialised professional training that all military personnel undertake in order to master the particular tasks that their Services assign to them. The whole weight of learning has thus become heavier than that carried by New Zealand commanders (and all their subordinates) in former generations.

This is not the only change during recent decades. Since around the time of the Vietnam War, most Western nations have become less willing to commit their armed forces to conflicts unless the cause is (or can be "sold" as) primarily humanitarian and not merely national-political. Public expectations of warfare have also shifted. Whereas death and privation were accepted as ever-present features of armed conflict as recently as the Second World War, now the public want iron-clad guarantees of minimal casualties, no collateral damage, and the quick return of combatants. The growing Western sensitivity to casualties has been manifest on many occasions in the quarter-century since Vietnam. The clearest case is perhaps the dramatic drop in American public support for the United Nations peace-enforcement mission in Somalia that followed the October 1993 killing of 18 American soldiers in Mogadishu. President Clinton and Congress responded promptly by withdrawing the entire American force.

These new attitudes place intense pressures on the commanders who must plan and lead all operations, including peace-support missions. These should, by their very nature, be far safer than combat missions, yet deaths inevitably occur despite the very best command efforts, actions and decisions. Single deaths, however, can be sensationalised (and even trivialised) by news-hungry media and insensitive politicians hell-bent on scoring points against their opposition. This often unfair and ill-informed scrutiny can be psychologically traumatising to those in command positions. They find serious accidents and deaths almost unbearable at the "best" of times. Dealing with intense and perhaps accusatory scrutiny only adds to their distress.

Becoming "media-savvy" is now critically important for commanders, whose

troops, squadrons or crews are exposed to far more media interest than ever before. They need to find a balance between, on the one hand, providing the public with basic operational information in a transparent and honest fashion and, on the other hand, maintaining an appropriate level of operational secrecy as well as protecting their subordinates' right to some privacy. Moreover, commanders need to learn how to handle improper media intrusiveness without causing offense, and how to remain within their constitution boundaries when quizzed on current political actions and decisions. Having sworn oaths to obey and serve their government they clearly cannot publicly challenge or condemn decisions they don't like. Commanders must especially watch out for the so-called "CNN factor," the ability of intrusive media to cause political and social disruption back home by reporting inaccurately or putting a negative spin on benign events.

One thing that some serving military personnel don't especially care for is recent governments' high commitment to peacekeeping. Some see this as a potentially costly distraction from their training for war. With over 700 military personnel deployed overseas on peace-support missions one cannot doubt that the NZDF is pulling its weight in terms of regional security. This heavy overseas commitment is nonetheless a double-edged sword: it gives many more Service men and women opportunities to exercise authority while on operations that they would otherwise get during periods of relative inactivity. Yet it removes them from training and exercise opportunities that focus more directly on preparing for command *in combat*.

Commanding forces in combat, they know, is very different to commanding them on peace-support missions. While no-one doubts that peacekeeping involves grave risks and often places personnel in mortal peril, the violence of "hot" combat (which might even result from an unexpected incident during a peace mission) will place commanders under different pressures in terms of the use of manoeuvre and firepower and the maintenance of force protection. Issues of life and death become far more important, as do the commanders' own grasp and experience (or lack thereof) of tactics and operational art. These are things that must be trained for; *intensively*. Peacekeeping alone cannot provide all the insights and skills needed.

Training with other national armies, air forces and navies may help to prepare the Services and their commanders for combat, especially as some of New Zealand's stated and likely allies have experienced real and major combat in recent decades. It is probable, in fact, that if and when New Zealand ever sends a sizeable force overseas for combat it will be part of a coalition led by the United States, Britain or Australia. Kiwi commanders, then, must ensure that they and their subordinates understand their likely partners' forces, doctrines, systems and procedures. Given New Zealand's relatively low level of training with US forces, its current and future commanders unfortunately get little exposure to, and experience with, US military personnel and their awesome array of state-of-the art weaponry and systems. This situation – a result of the "ANZUS rift" caused by New Zealand's anti-nuclear stance – is a factor that the New Zealand Government needs to address.

Perhaps the last of the major issues affecting, or likely to affect, New Zealand military commanders are those of gender and ethnicity. Increasing numbers of women are joining the three Services, and even entering roles (such as flying fighters, at least before the air strike capability disappeared) traditionally reserved for men. They are also rising through the ranks and assuming significant responsibilities, including that of command. Although there has not yet been a woman of

one-star rank (brigadier or equivalent), there have been several of colonel or equivalent rank. Likewise, the NZDF continues to attract many Maori, with a far higher percentage of the uniformed strength being Maori than found in almost any other employment sector. There are currently Maori at almost all ranks, including Major General Jerry Mateparae, Chief of Army General Staff (CGS). He is not the first Maori warrior to have gained this position.

All commanders, male and female, Maori and others, need to be aware of society's changing values, including increased sensitivity towards gender and ethnic issues. Women can now be committed to combat (at the time of writing, for example, one of the rifle platoons in East Timor has had a woman commander) and they must be treated fairly and without discrimination in every instance. Harassment must not be tolerated, and commanders need to remain mindful of all Equal Opportunities issues. They must also demand, and use discipline to enforce, a zero-tolerance policy on discrimination and harassment. Their best means of accomplishing this is to remove all objectionable behaviour, even that usually associated with mirth, from their own conduct, and to make their expectations clear to all subordinates.

It is the same with ethnic and racial issues. Not only will commanders need to recognise that the NZDF is as multi-cultural as wider New Zealand society, with a strong Maori participation, but they must also remain sensitive to the ethnic dynamics of regional situations. New Zealand has peacekeepers in nations or territories marked by ethnic divisions, and also sponsors a Mutual Assistance Programme to provide academic and skills-based training to members of other Pacific-rim nations' armed forces. The Royal New Zealand Air Force Command and Staff College at Whenuapai includes officers from other nations and ethnic backgrounds on its annual senior course.

Ethnic issues, therefore, cannot be ignored by leaders and commanders if harmonious relations are to develop *within* the NZDF and *between* it and other national forces. Sensitivity, tolerance and inclusiveness must become integral to every commander's behaviour and leadership style, and it must become the norm at all levels of his or her unit, right down to the private soldier or other Service equivalent.

All in all, then, New Zealand's current crop of military commanders, and those rising through the ranks to succeed them in due course, have demanding challenges to face as they strive for excellence. Yet, if their forebears are any example, New Zealand has every reason to expect that its officers will meet their challenges with passion, determination, commitment and great professionalism. They will strive to overcome the frustrations of resource constraints, unpopular political decisions, occasionally testing inter-Service relations and so forth to create motivated teams that can fulfil their government's requirements effectively, safely and credibly. In doing so, they will doubtless emerge as exemplary citizens of both New Zealand and the world's community of nations. We can, therefore, be optimistic that New Zealand commanders will live up to the high standards of their predecessors.

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Reviews

GALLIPOLI 1915 by Richard Reid, ABC Books 2002, hardcover, dust jacket, 154 pages, $39.95

Reviewed by Lex McAulay

This book is timely, in that our last veteran of Gallipoli, Alec Campbell, recently passed away. It is sad to read this book with the certain knowledge that no one in any photo is alive. Richard Reid, has created a book with a different aspect on the Gallipoli campaign. The illustrations are selected from those taken by the soldiers themselves, and from those published by the newspapers of the time. Richard Reid's text provides a general background to the photos and drawings, which are accompanied by good captions.

Dr. Reid has widened the horizons, as it were, of this book, by reminding the Australian reader that as well as Australians and New Zealanders, there were British, French and Indian forces involved, and the Turks and Germans.

The book is well structured, and in sequence covers The Allied Navies, The Landing, Battle, Daily Warfare, Medical Services, Beaches and Harbours, Daily Life, Dwellings, Evacuation, Gallipoli Portraits, The Gallipoli Drawings of Captain Leslie Hore, and Remembering Gallipoli 1915-1930.

It's all there – the ships, the men, the terrain, the lifestyle, death and burial, and the aftermath. Hopefully, this book will be a success and so will be followed by others using personal photos taken in France and Palestine.

The book does have one major irritation – to this reviewer, anyway. Instead of the caption for an illustration being adjacent to it, almost invariably the captions are on another page, sometimes in a block of captions, sometimes above or below a piece of text, and this is compounded by the fact that there is no standard presentation, so one is continually searching for the correct piece of information relating to an image.

THE ELEVEN DAYS OF CHRISTMAS AMERICA'S LAST VIETNAM BATTLE by Marshall L. Michel III, Encounter Books, USA; ISBN 1-893554-24-4 hardcover, dust jacket, 324pp, 20 photos, 4 appendices, notes.

Reviewed by Lex McAulay

This book will be painful reading for those veterans of the USAF B-52 bombing campaign against Hanoi in December 1972, for the families of those killed or badly injured in the strikes, and presumably, also, for the families of the senior officers concerned, as their incompetence, arrogance and sheer lack of understanding of leadership in war are described in detail.

President Richard M. Nixon had become fed up with the North Vietnamese attitude to serious discussions about ending the war in Vietnam. Though the Vietcong had been annihilated and the North Vietnamese forces defeated everywhere, the Politburo in Hanoi tried to achieve maximum advantage from the anti-war attitude of the US Congress. Nixon wanted an end to the war before Congress convened for the 1973 year. He decided to use the B-52s of Strategic Air Command (SAC) to attack targets in and close to Hanoi to show the Hanoi leadership just what a fearsome

force he could send against the city, but which had not been so used before.

It was a close run thing. Nixon had a narrow window of only a few weeks to force the Vietnamese to agree, before Congress would bring a halt to the bombing by refusing funds for the war, but the Vietnamese defences achieved remarkable success against the bombers. Today, both sides claim victory – the USA because the bombing forced the Hanoi leadership back to the peace talks, so the fighting ceased and the US POWs were returned, but the Vietnamese claim that the US left Vietnam because the B-52s were defeated. However, Marshall Michel points out that the North Vietnamese did not begin their final offensive in 1975 until Nixon was no longer in office, and not able to deploy US air power to support South Vietnam, as had happened in the April 1972 offensive.

Marshall Michel, himself a USAF veteran of 320 combat missions in F-4s and RF-4s, has provided a thoroughly researched account of the "Christmas bombing", with contributions from participants in the White House, through the USAF chain of command to the squadrons and aircrews who flew the missions, and also from veterans on the Vietnamese side, backed by official and personal documents.

The faults of the British high command in WWI have been well researched and reported. The hierarchy at SAC mirrored all those shortcomings: the British generals lived and planned in chateaux remote from the battle, and SAC planned and issued detailed orders for operations over North Vietnam from the HQ in the USA; the British generals had no experience of modern warfare, and SAC was run by generals with no or little bombing experience, and that was gained in 1944-45; British generals sent overloaded men across morasses into unbroken defences, and SAC orders sent formations time after time at the same height along the same single approach route at the same time intervals to the same unsuitable targets over the concentrated defences; detailed plans from SAC staff were to be followed to the finest degree, but losses were the fault of the subordinate ranks and success due to the expertise of the commander and his staff.

SAC, in existence solely to execute nuclear retaliation in the event of such an attack by the USSR, became almost a separate armed service rather than a branch of the USAF. SAC created for itself an unassailable position – only SAC knew how to maintain the force of bombers which alone kept the USSR at bay. Advancement in SAC was achieved by slavish observance of every little rule and regulation, and instant unquestioning obedience to procedures and decisions from SAC itself – even an aircraft captain with a problem was told by direct radio link with Omaha what to do in an inflight emergency; his unit commander was a mere listener to the transmissions. Qualifications and experience gained outside SAC were frowned upon – everything necessary for an enlisted man or officer to perform any task or assigned duty was known and taught in SAC by SAC methods.

But by 1972, the commander of SAC and the commander of the B-52 force deployed to the western Pacific were fighter aces from WWII, and in this campaign were shown to be out of their depth, perhaps another example of the Peter Principle – promoted that one fatal time above their level of competence.

The Vietnamese, while infuriating their Soviet teachers, did deduce ways to make their obsolescent SA-2 weapons system effective against the B-52s, though in this they only exploited the many errors in the original SAC plan.

If the results of the studies by staffs at subordinate operational headquarters had been accepted by SAC, it is quite probable that no B-52s would have been lost. The campaign would have been a resounding success. As it was, 15 B-52s were shot down, though some struggled back to base or to an area where the crews could be rescued.

The author is unbiased, but it is difficult to find anything planned or ordered by SAC that was not wrong, and then only changed after heavy losses. The first attacks were made at the same times; with the same long interval between waves which allowed the defences to recover and prepare; along the same approach route, at the same altitude, to the same targets; with the same exit procedure which took the aircraft over the highest concentration of defences and negated the effect of their on-board EW jammers; turned the aircraft back into the 100mph jetstream, and back over enemy territory rather than out to sea; wrong targets were selected and wrong sub-model B-52s sent to them. The funnel-neck in the air defence system, the missile storage and assembly depots, was ignored.

Crews were ordered not to take evasive action under threat of court-martial; a colonel ordered a fuel state report from the entire airborne force during the approach to the target, and insisted, despite being told this would inform the enemy how many aircraft were coming and their location. A crew was charged with violating a "no-fly" zone near China, but as it was deemed aircrew did not have "a need to know" these zones, the maps were classified too highly to issue them to crews. A survivor could not understand why no one came to rescue him, and surrendered only when almost dead from exposure and starvation – HQ had decided his radio transmissions were a Vietnamese trap. SAC bombed elsewhere than Hanoi rather than comply with the political aim of the campaign. At one stage, Nixon had to tell the most senior military officer that unless the bombing was conducted as ordered, that officer's resignation was required.

After the campaign, commanding generals, with one exception, ordered self-adulatory "histories" compiled. Crew members still resent the lack of awards to their colleagues who repeatedly faced the missiles, compared to awards to senior staff who did not fly or flew one mission, but who went along with the headquarters version of events: "unprofessional" crews brought losses on themselves, and SAC's actions were beyond reproach. The official version, produced only after thorough vetting by senior officers had removed all reference to shortcomings in the USAF, is in use at staff colleges today. This book provides the "unvarnished truth".

One crumb of comfort for Australians reading this book is that Australian commanders serving under operational command of an Allied power retain the right to consult their own national defence HQ and Government before joining any operation about which they have doubts. The Hanoi missions planned by SAC abandoned every tenet of commonsense.

This is an absorbing account of a military campaign which had the potential to make a failure of the US policy of disengagement from Vietnam. The situation arose because of the global responsibilities of the US Defense forces, in which "side-shows" diverting attention and resources from the major aim of keeping the USSR in check were deeply resented. The events of September 11, 2001, show that some things remain constant.

(This review copy is a US edition, and in June the publishers advised it will be available in bookshops in Australia or direct from Wakefield Press, Kent Town, South Australia; or www.wakefieldpress.com.au.)